

WESTERN INDUSTRY

VOLUME VII NO. 1



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WESTERN INDUSTRY

The Journal of Western Development

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CONTENTS for JANUARY

Western Resources

A state of war with the Axis powers and particularly our conflict with Japan serve to accentuate the progress made over the past year in making available the West's natural resources and providing huge plants for producing the sinews of war here on the Pacific Coast. Here, we provide half of the aircraft production of the nation—California has ample petroleum reserves for all needs. Major shipbuilding plants are located here from Los Angeles to Seattle. More than a third of the nation's aluminum will shortly be produced in the Northwest; large plants are already producing this vital light metal and soon large processing plants will be operating. Here we are well prepared to wage the war at our back door. See page 5.

Washington View

The eyes of the nation are now focused on the West, Arnold Kruckman, well-known newsman and commentator, writes from the Capital. The western states have already received a large share of the contracts to provide war materials and appropriations for new plants authorized by the Defense Plant Corp. In close touch with the views of Federal government, Mr. Kruckman looks to the immediate future and outlines the even greater part which he believes the West will take in the war. See page 7.

Miscellany

William J. Casey, Chairman of the Board of Editors of the Research Institute of America, views the future of business under war economy. It is his job to advise 25,000 businessmen clients how to stay in business; how to do business with the government. He reviews the immediate plans of the government and outlines the new allocations program being formulated. See page 9. Three-dimensional Seeing, the art of creating a contrast in color and brightness between work in process and machines and background, are discussed by an expert. See page 14. Some good pointers on how to attain "good housekeeping" in your plant are furnished on page 17.

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WESTERN INDUSTRY

JANUARY, 1942

VOLUME VII. No. 1

Louis F. Holtzman, *Editor*

Arnold Kruckman, *Washington (D.C.) Editor*

We Take a Bow

WITH this issue, *Western Industry* starts the New Year with a new dress. We grow in stature to a larger format—the standard size book recommended by the National Industrial Advertisers Association. It was not without some regret and only after much earnest thought that we have determined to abandon the intimate pocket-sized book of the past. There was much to be said in favor of the convenience of the smaller sized book for the busy reader. However, we feel that the standard size book will give us greater scope editorially in presenting the facts and potentialities of the development of the West. Cover and size are but the outward signs of progress. Editorially, we shall strive to do an even better job in reporting and pointing out the implications of the news and recording the progress of industry of the vast area west of the Rocky Mountains.

Japan's Economic Situation

WE COULD make no graver mistake in our war effort against the Axis nations than to underestimate the power and resources of our adversaries. There is no suggestion here that this country is likely to do so. War with Japan was made inevitable last July when a presidential order froze Japanese assets in this country and embargoed shipments of petroleum and other vital necessities out of this country. Important Japan goal now is to conquer the Dutch East Indies, potential source of replenishment of petroleum supplies. Japan is less prepared to wage an economic war than to meet the test of arms. Some interesting facts compiled by the *Chinese News Bureau* headquarters in New York with respect to Japan's economic situation throw some light on the decision for the surprise attack in the hope of a quick decision. Summarized, these factors are: *Financial exhaustion*—The China "incident" has cost the Japanese government nearly 60 billion yen, an amount equal to the total governmental expenditures for the previous century. *Industrial disintegration*—Under the impact of the economic blockade, Japanese industries prior to war with us were operating less than 40 per cent of full capacity with the important silk industry facing ruin. *Agricultural disintegration*—Result of four year undeclared war with China, Japanese agriculture has steadily declined owing to shortage of men and fertilizers. Index of food production decreased from 113.6 to 72.4 in the first three years of war and is now still lower (*Oriental Economist*). The 1941 crops of rice, wheat, barley, rye and soybean this year are 10 per cent below 1940. *General privation*—From the levels of 1936, the Japanese living standard had fallen by 40 per cent by the end of 1940 and since is still lower. Add to this the loss of millions of dollars by shutting off silk shipments to this country which took upwards of 80 per cent of the total. These funds went

a long way to offset the 52,000 barrels of oil daily which were shipped to Japan prior to the July embargo.

China and the War

THE path of civilization, of commerce and of industry ever moves westward—from the Mediterranean Sea to the Atlantic Ocean and later to the Pacific. The conflict in the Pacific area finds its root in this immutable rule of the past centuries. Now we are engaged in a clash with an aggressor nation, the outcome of which will determine whether civilization and free commerce shall go forward and westward or be retarded and dominated by a Dictator nation which finds its allotted space and sphere of natural domination too small for its ambitions. Should the fantastic ambitions of Japan be achieved, the teeming millions of Chinese would be ringed about with a wall of Japanese domination. An awakened China is ready to take its place with the progressive nations of the world. To supply the modern things of life for an awakened China and a higher standard of living for its people, which is bound to come after the war, presupposes a foreign trade of huge proportions. The Pacific Western area of the United States at the moment is the focal point in the world conflict. Nature has been lavish in providing the natural resources close at hand to wage the war of the Pacific. For more than a year, huge plants have been building here to utilize these natural resources and convert them into the sinews of war. Most of these man-made resources, such as shipbuilding plants, machinery producing units, new steel plants and a light metals industry, augmented by cheap hydro-electric power, can be converted readily to peace-time uses to make the West more self-sufficient. The West will do its part in meeting the challenge for more materials for war. And it will be no less prepared to supply the needs of foreign trade demanded by a new order in the Orient once the war is brought to a successful conclusion.

Our Stake in the Pacific

OUR lifeline through the Pacific Ocean must be kept open. Our nation was prepared when the Japanese blow came, for we had been building up stockpiles. The maintenance of this lifeline and control of the Pacific Ocean will shorten the war. It will keep the Japanese away from oil supplies of the Dutch East Indies which they now eye so thirstily. Japan must replenish its oil supplies now derived from storage if it is to continue the war for a protracted period. Tin is probably the most important of our Pacific imports. We consume more than 100,000 tons annually and produce practically none. Singapore and the Netherlands Indies provide us. We have a good stockpile of tin on hand and are building a smelter in Texas to refine Bolivian ore. Ninety-eight per cent of our rubber comes from the Orient and we are consuming 600,000 tons annually. Rubber is reclaimable and we are now using 30 per cent of this to 70 per cent crude. A third of our chromium supply comes from the Philippine Islands and New Caledonia. Chromite, manganese and tungsten come from the Pacific area. By all means, the Pacific lifeline must be kept open.

METAL INDUSTRY AND WAR

Mineral Resources of the Western States Will Play a Major Role in Providing Materials of War—Plan for Steel-making at Provo, Utah Important Factor and Will Provide Steel Plates for Pacific Coast

SUDDENLY and vividly, the Pacific Coast area from San Diego to Alaska including the western hinterlands has become the front line of offense and defense against aggression from the Orient. Much of the materials of war which before were flowing evenly to Atlantic coast ports must now be retained here or directed westward. The gold and silver of California and Nevada played an important part in financing the Civil War and helping over the rehabilitation period. Today, the metal and mineral resources of the West—copper, magnesium, coal, aluminum, iron, petroleum—all will play a vital role in winning the war.

Add to this the strides made in production facilities over the past year and a half—huge plants utilizing plentiful water power for production of aluminum and magnesium; facilities for producing half of the nation's aircraft output to say nothing of the huge shipbuilding facilities scattered from Los Angeles to Seattle.

For the nearby future we have already under construction or projected, new huge plants for increasing production of copper, aluminum and magnesium. Utah iron ore and coal will be utilized to build up a fully integrated steel industry in the West, centered at Provo, Utah with an almost equal radii to steel and iron processing centers at Seattle, Los Angeles, Pittsburg and San Francisco. Authorized is a 126 million dollar program for Provo,

Utah which will produce pig iron utilizing western coal and iron. For the first time in history steel plates here will be produced in the West, 500,000 tons annually, going to Pacific Coast shipyards and eliminating the long haul from the East.

Thus, in the first War of the Pacific, the western states' area has the major role and is already well on its way toward fulfillment of this important task.

Additional plant capacity for production and fabrication of metals in the western area announced by OPM within recent weeks include a \$9,000,000 plant to produce aluminum at Spokane; a \$5,500,000 aluminum fabricating plant for Los Angeles; a \$22,000,000 aluminum fabricating plant for Fairview, Ore.; a \$9,000,000 plant for copper production at Miami, Ariz., and a \$12,000,000 addition to the present magnesium producing facilities at San Jose, Calif. Staggering figures, but these all add up to an imposing picture for industrial development of the West.

In the matter of petroleum, California leads all states in the known reserves, having an estimated three billion barrels or about one-sixth of the nation's total. As a more practical matter, California producers for the past several years under a voluntary system of curtailment have held production of crude oil down to slightly under 625,000 barrels daily. Wells have

been shut in drastically so as not to upset the economics of the industry, but once opened up can produce far in excess of the capacity of the present large facilities for converting crude into gasoline and other allied products.

The recent preliminary report of the Senate Subcommittee of the Committee on Public Lands & Surveys acting under resolution 53 to investigate the nation's mineral resources, starts out with the statement that "The West holds the answer to current problems of raw material shortages which threaten the stability of great segments of industrial activity." This statement was made just prior to the official declaration of war.

It was only the exigencies of emergency or war needs which could have produced the go-ahead signal for the huge program for utilization of western iron ore and coal at Provo, Utah which will make the West less dependent upon eastern mills for its supplies of steel and iron. What need to investigate or stress the importance of these raw materials at the Pacific West's back door while eastern mills most of the time were competing for the Western steel business?

Western Steel Development

No more important development in the history of western progress has come than the recent authorization for a major pig iron producing center with rolling mills at Provo, Utah. The total 126 millions authorized will be expended for construction of four additional pig iron blast furnaces, six open hearth furnaces to produce steel ingots, blooming mill and a rolling mill. The contemplated production of 840,000 tons of steel ingots annually and the 500,000 tons of steel plates will be utilized chiefly on the Pacific Coast and

• Utah copper mine, Kennecott Copper Corp. This mine, the largest open cut copper development in North America, is located in Bingham Canyon, Utah, about 28 miles from Salt Lake City. Operation is conducted entirely by electric shovels. The ore is loaded into 100-ton cars which are hauled to the assembly yard by electric locomotives, and thence by steam locomotives, a distance of about 18 miles, to the concentrating mills at Garfield for treatment. Mine serviced by about 100 miles of railroad track.



largely by the plants in Seattle, Los Angeles and San Francisco areas. New plate mill to be erected is the first west of the Rocky Mountains while the present lone blast furnace at Provo to be augmented by four additional such units is now the only pig iron production source in the West. (See page 8.)

A sudden switch in plans announced some weeks ago by the OPM will put Provo, Utah in the front ranks of steel producing centers. Original plans were for the location of the added facilities largely at Pittsburg, Calif. where the Columbia Steel already has large steel processing facilities.

According to OPM plans, the new facilities for Provo include also increased output of coal at Columbia, Utah, iron ore at Iron Mountain, and the necessary railway facilities.

Alleged reason for the sudden change in plans by OPM which gives Provo the lion's share of increased facilities is that pig iron produced here would not have to be reheated and can be taken from the blast furnaces and sent to adjacent open hearth furnaces while still hot. This would not be possible if the open hearth furnaces were located at Pittsburg, Calif. as originally contemplated to use Provo pig iron. In addition, coke and gas by-products can be conserved for reusing at the open hearth furnaces, mills and other plants.

Huge Aluminum Output

In the field of aluminum production, the western area is outstanding and will assume more importance in the future supplying probably considerably more than one-third of the nation's total output when present projects are completed. All the existing and contemplated facilities for the production of aluminum on the West Coast are located in the Northwest, made possible by the use of Bonneville and Grand Coulee power. Bauxite for aluminum production has to be shipped from the East, important present sources being Arkansas and Surinam, Dutch Guiana.

The present program will add 180 million pounds annual capacity to existing 240 million pounds in the Northwest.

Of equal importance to the proposed increase of facilities for producing aluminum ingots in the Northwest, is the approval for construction of huge processing and fabricating plants here on the Pacific Coast to be located at Los Angeles and Fairview, Ore. Aluminum Co. of America now has the only fabricating plant west of Detroit with its plant at Los Angeles. Most of the aluminum produced in the Northwest now goes to the East for processing into bars and sheets.

At Los Angeles, Aluminum Co. of America will build a huge plant, adding

to existing facilities, which will have a capacity to fabricate 120 million pounds of aluminum annually. At Fairview, Ore. the same company is building for the Defense Plant Corp. a fabricating plant which will fabricate 60 million pounds annually, to be completed in 12 to 14 months.

New Plants Approved

According to the United States Department of the Interior information furnished to *Western Industry*, the following summarizes the latest plans for increased aluminum production facilities in the Northwest:

The Defense Plant Corp.'s aluminum reduction plant at Troutdale, Ore. is already under construction and will produce 90 million pounds annually.

The Defense Plant Corp. has selected a site for its Spokane, Wash. aluminum plant which will produce 60 million pounds annually. The Bonneville Power Administration is constructing a 115,000-volt transmission line from Grand Coulee to Spokane which is ahead of construction progress plans and which will be ready on March 1, next, well in advance of completion of the plant.

Design work is being done on the aluminum reduction plant projected by the Defense Plant Corp. at Tacoma, Wash. to produce 30 million pounds annually. *Part of the alumina will come from the Utah alunite deposits. This will be the first plant to make use of the western deposits of alunite in producing aluminum.*

The Aluminum Co. plant at Vancouver, Wash. is now producing at the rate of 180 million pounds annually. The Reynolds Metals Co. plant at Longview, Wash. now is producing and shortly will have a production of 60 million pounds annually.

The Bonneville Power Administration has commitments to supply the new Tacoma plant with 40,000 kilowatts, the Fairview plant with 27,500 kilowatts and the Spokane plant with 65,000 kilowatts. It has also agreed to supply an additional 35,000 kilowatts for either additional aluminum or magnesium reduction at Spokane.

West's Power Resources

As war with Japan began, 1,426,987 kilowatts of electrical energy were being generated at plants scattered through the western states, administered by the Department of the Interior and principally used for the war effort.

In 1936 the total generating capacity of all plants under the jurisdiction of the Department of the Interior, which is now the largest producer of electrical energy in the world, was but 152,130 kilowatts. Today it is 1,426,987 kilowatts, and in 1943 it will reach 2,618,587 kilowatts. In

1944 it will reach the total of 3,139,462 kilowatts. The resources are present for an additional 9,000,000 kilowatt effort by 1947.

In 1936, Japan reported to the Third World Power Conference a total installed capacity of all electric energy of 5,794,000 kilowatts. Power from Interior department is supplying the entire aluminum industry in the Pacific Northwest, half the airplane industry of the Pacific Southwest, and serving many other munition points.

PRODUCTION PLAN

Defense Contract Division Opens New Offices to Assist Business in the San Francisco Bay Area

An office of the Division of Contract Distribution, Office of Production Management, has been established at Oakland, Calif. Official notice of the decision to open an office in Oakland came from Floyd B. Odum, director of the Contract Distribution Division in Washington, D. C., to F. M. Smith, the area manager.

The Oakland office, which will serve this area's 1,500 manufacturing plants which are producing a tremendous volume of national defense material, was secured as the result of direct appeal by the Oakland Chamber of Commerce National Defense Committee.

CALENDAR OF EVENTS

January 7-9—AMERICAN NATIONAL LIVESTOCK ASSN., Utah Hotel, Salt Lake City, Utah

January 11—CALIFORNIA DRY CLEANERS ASSN., San Jose.

January 12-14—MOUNTAIN STATES HARDWARE & IMPLEMENT ASSN., Cosmopolitan Hotel, Denver, Colo.

January 14-16—CERTIFIED BOILER & ELEVATOR INSPECTORS, Los Angeles

January 15—DRIED FRUIT ASSN. OF CALIFORNIA, Palace Hotel, San Francisco.

January 15—OREGON SAVINGS & LOAN LEAGUE, Benton Hotel, Corvallis, Oregon

January 16-18—CALIFORNIA NEWSPAPER PUBLISHERS ASSN., Hotel del Coronado, Coronado, Calif.

January 19-21—MOUNTAIN STATES LUMBER DEALERS ASSN., Shirley Savoy Hotel, Denver, Colo.

January—NORTHWEST CANNERS ASSN., Seattle, Wash.

January—OREGON ASSOCIATION OF NURSERYMEN, Portland

ALL EYES ON THE PACIFIC

Washington Apparently Has No Fears Concerning the Military Safety of the Pacific Coast—Billion Dollar Defense Plant Expansion Already Authorized Here Will Probably Be More Than Doubled

By ARNOLD KRUCKMAN
Washington (D.C.) Editor

THERE IS complete assurance that the Pacific West swiftly will have been made safe from a military standpoint by the time this is published. The Capital feels the same confidence in the immediate and potential economic prospects of the area. It is surprised that the



people of the Pacific West should have even the slightest question about the future in their minds. Military and non-military leaders of the major governmental agencies emphasize that the continued expansion of all facilities in the Pacific West is almost the chief foundation of their thought. All facilities must be expanded for the use and service of armed forces, and all possible corollary facilities must be developed as swiftly as possible to support the civilians who do the work that stands back of the armed forces.

They tell you here in Washington the Pacific West is important now from every standpoint, as it has never before been important in the history of the world. Obviously, the solid base of the drive against the Japanese rests upon the people and the resources of the Pacific West. The way they see it here, the hope of succor and replenishment and eventual renaissance in the whole Pacific area, thousands of miles to the Indian Ocean and to the South Seas, must rest chiefly on the people of the Pacific West.

Orient Looks to Us

They think in Washington that both Europeans and Asiatics, not under the spell of the Japanese, in those communities in Asia, in the Indies, in Australia, New Zealand, our own Philippines, and the other widely scattered points, focus their trust of the future upon the Pacific West with an intensity you probably have not sensed in the preoccupation with your own distressing experiences.

We here on the Atlantic find it difficult to believe that any substantial element in the Pacific West should doubt the present or question the future. We see the Pacific West as the one shining area of continued prosperous certainty. Whatever the post-war aftermath may be, here or

elsewhere, you out there should have no fear. From the realistic springboard of immediate economic facts we know that everything you have will expand. Officially they tell us here that the tempo of defense activities up to the declaration of war against Japan will immediately be more than doubled. Off the record we hear expansion will be more than trebled.

Up to outbreak of the war the gross of contracts placed for defense totaled \$43,000,000,000; disbursements for deliveries amounted to \$12,000,000,000. In 1942 this discarded program was to have functioned at the rate of \$36,000,000,000 a year. According to official estimates the program for 1942 should now be somewhere between \$72,000,000,000 and \$100,000,000,000. To break this down into regional figures that apply over-all to the Pacific West is not practicable. The statisticians appear to be reluctant, and the military feel the information might in its details be useful to the enemy.

It is no secret, however, that up to the outbreak of the war, defense plant expansion alone in the Pacific West grossed approximately \$1,000,000,000. Very roughly, the total over-all of defense funds spent in the Pacific West has repeatedly been estimated as not less than one-fourth of the whole, and probably somewhat nearer one-third. It appears, therefore, there has actually been disbursed beyond the Rockies somewhere between \$3,000,000,000 and \$4,000,000,000; and that the contracts or commitments up to declaration of war have

One of the best-informed writers at the Nation's Capital, Arnold Kruckman, presents each month pithy comments on political developments and their practical application to industry of the West. Any reader who wishes additional information may write to him directly, using business letterhead, at 1120 Vermont Ave., N.W., Washington, D.C. Inquiries will be answered free of charge. Copies of pending congressional bills may also be obtained free of charge.

totaled over-all somewhere between \$10,000,000,000 and \$15,000,000,000. Double those totals for 1942, and you find, of course, a potential fiscal underpinning ranging from \$20,000,000,000 to \$30,000,000,000; and, possibly, running as high as \$45,000,000,000, according to

the unofficial estimates. We have become so used to these pyramids of billions that we are apt to be apathetic about their meaning.

Bear in mind that just a little more than \$45,000,000,000 of national income supported the 130,000,000 persons in the United States during some of the depression years. All the people in the British Isles, rich and poor, noble and simple, have a total income normally of less than \$45,000,000,000, in a year. And bear in mind further, these potential defense figures do not include the normal non-defense disbursements for the usual public works by Federal, State and local governments, and the money spent by private civilian industries, businesses and services. Aside from purely military heavy construction, such as fortifications and sea-coast defense works, which properly are left unestimated in any study of this kind, there is the vast aircraft industry; the naval and merchant ship construction; new construction of cantonments and camps and stations and air fields and arsenals, depots, plants; and there is the production of ordnance; and the equipment upon which most of this rests—the machine tools.

More Aircraft

In the most recent resumé of the national defense program, OPM recalled that in July, 1940, our over-all production of airplanes was 500 craft per month. A year ago, in January, 1941, the total was slightly more than 1,000 per month. During the current January, 1942, the output is over 2,000 a month. Half of these come from the Pacific Coast. By next January it is estimated our production, plus England's, compared with Germany's, will be sharply in our favor. The significance of all this is pointed out interestingly by Raymond Reeves, Regional Business Consultant at San Francisco for the Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce. Mr. Reeves, a clear observer and dispassionate reporter, in a document to be issued by the Regional Research Unit of the U. S. Department of Commerce, points out that in 1935 at San Diego, Calif., just six persons were employed in a factory making aircraft. At this time there are something like 50,000 employed or about to be employed in San Diego alone.

In the Los Angeles area there will be approximately 125,000 engaged in making planes in January; and in Seattle 25,000. There is no reason whatsoever to fear that any of these plants will be removed from their present locations. It is more than likely some of them will be expanded. And it is very certain that entirely new plants will be established in some of the areas immediately east of the mountains. In the Pacific West, as else-

where, one of the chief conditioning factors of production is the supply of trained or skilled labor. Mr. Reeves, again, in his report to Dr. Wilford L. White, Chief of the Regional Research Unit, U. S. Department of Commerce, is authority for the statement that in the Pacific West there are on an average of 100 jobs for each applicant qualified to do skilled work. Another authority has pointed out that work has been offered in 224 occupations without a single applicant. Agricultural labor, in the Pacific West, is down over 40 per cent.

Western Shipbuilding

The nation now has in action 11 government shipyards and 110 private yards, working on contracts amounting to \$7,351,497,905 awarded for the building and conversion of 5,334 ships. In addition approximately another billion is being spent for the expansion of shipyards and repair facilities. During 1942 it is calculated 574 new ships will be delivered to the nation; and in 1943 another 689 craft. Mr. Reeves makes the interesting observation that the San Francisco Bay region alone has orders for more than \$800,000,000 worth of ships. He reports that 13 private shipbuilding firms in the Seattle area presently employ 17,283 workers; and that in the Los Angeles area 1,000 persons employed in building ships early in 1941, jumped to 10,000 in July, 1941, and at this time the number is approaching 50,000. At Bremerton, over 18,000 men are employed in shipyards; and at Mare Island the number has jumped from 5,000 to 40,000.

The orders now on hand, disregarding the expansion that is inevitable, will keep everybody working at top speed through 1947. The U. S. Maritime Commission credits the Pacific Coast with leading the nation's production of emergency cargo ships. The Oregon Shipbuilding Corp. at Portland is first; California Shipbuilding Corp. second, and Richmond Shipbuilding Corp. fifth.

Huge Army Planned

Before the declaration of war it was estimated by OPM, military defense construction, new jobs, in 1942, would run approximately \$11,000,000,000. This included naval projects along the several coasts; camps, cantonments, posts, warehouses, bases, munition depots, arsenals, industrial facilities, and production facilities for raw materials. Approximately 17 new cantonments were in the blueprint stage. The whole program was based on the army of 2,000,000 men, and the navy as constituted before the attack on Hawaii. Now, however, that entire plan has been greatly expanded. The army will rapidly be increased to 6,000,

000 men and more; the navy will be expanded as quickly as men can be obtained.

New camps, cantonments, depots, arsenals, and bases will be brought into existence in this country, and wherever otherwise needed, as swiftly as the facilities are available. For obvious reasons the specific information about the location of the new camps and plants and depots is not published. Nor does the welter of new appropriations, enacted by Congress with extraordinary rapidity, give much indication, at this stage, how the new construction is to be allocated.

It is patent every state will get some; and that the Pacific West, the base for the vast Pacific theater of war, will get a substantial part of this new work. It may be some indication to bear in mind that the Pacific West received over 300 per cent additional construction contracts of all kinds in the 1941 expansion program. Before the declaration of war the Federal Power Commission announced that there would be an immediate need for the development of 43,000,000 kw. power in the nation. It was stated that any lag in developing steam and hydro turbine generators would cause sharp curtailment in non-defense power supply, and that the San Francisco area might be 40 per cent short, while Southern California might lack 16 per cent. It is apparent in the Capital that every facility for the production of more power will be encouraged strongly. In a twinkling Congress voted \$30,000,000 for the Bonneville transmission lines, to be ready next summer. A half dozen or more interests are negotiating for power in the Pacific Northwest to manufacture chrome, tin, tungsten, manganese, and to make synthetic rubber.

Substitute for Chrome

One group has a plan to produce a substitute for chrome if the power can be supplied. In California, Shasta Dam, the Keswick power plant, the Friant Dam, Madera Dam, even the Antioch steam plant, are now the subjects of intense and concentrated devotion by the power people and by the Reclamation personnel. The interest is not only in power, but also in the food potentialities of the lands under the dams.

In Colorado, Utah, Oregon, Washington, Idaho, Southern California, Arizona, New Mexico, Nevada, Wyoming, on the Colorado River, wherever there is a reasonable possibility of making power and making foodstuffs and bringing the energy of electricity or food into existence swiftly, the various regular services of the Government agencies will be interested in studying the problems. Any demonstrable project will undoubtedly receive congressional financial support.

Continued on page 30

BOOMTOWN

Provo, Utah, New Base Point of Western Steel-making Industry, to Double Its Present Population

Western boomtown of 1942 can well be applied to Provo, Utah. This sleepy college town nestling in the foothills of the Rocky Mountains, 50 miles south of Salt Lake City, result of war and quick change in OPM plans, suddenly is projected to the status of a major iron and steel producing center, focal point of the steel production facilities of the West.

Here in this community of 18,000 will be expended a huge sum exceeding one hundred million dollars to augment the iron and steel making facilities of the



- (1) Bethlehem Steel Corp., Seattle.
- (2) Northwest Rolling Mills, Inc., Seattle.
- (3) Columbia Steel Co., Pittsburg, Calif.
- (4) Bethlehem Steel Corp., South San Francisco.
- (5) Pacific States Steel Co., Niles, Calif.
- (6) Bethlehem Steel Corp., Los Angeles.
- (7) Columbia Steel Co., Torrance, Calif.
- (8) Columbia Steel Co., Provo, Utah.
- (9) Colorado Fuel & Iron Co., Pueblo, Colo.
- (10) Columbia Steel open pit iron ore mines, Iron Mountain, Utah.
- (11) Columbia Steel coal mines, Columbia Utah. Distances shown on the map are by railroad.

Columbia Steel Co., subsidiary of United States Steel Corp. Total cost of the project approved within recent weeks by the OPM is placed at \$126,000,000, which presumably will include increased facilities for production of iron ore at Iron Mountain, and of coal at Columbia, Utah. The completed picture will supply an integrated steel industry for Utah to make 1,450,000 tons of pig iron to be made into 840,000 tons of steel ingots for the mills of San Francisco, Los Angeles and Seattle, and 500,000 tons of steel plates annually for the shipbuilding facilities of the West Coast. (See page 5.)

New Problems Poser

The expansion now proposed by OPM for Provo originally gave most of these facilities to Pittsburg, Calif., and has posed many new problems for the city officials. The expansion will probably directly increase employment at the new plant by 5,000, which, allowing for families and augmented retailing and service utilities, can easily double the present 18,000 population. Concomitant problems are to supply housing, sanitation, schools and other facilities. It has been estimated that a \$6,000,000 public works program will be necessary in this area.

Award of the OPM contract promises huge development of the city of Provo and its utility services, as well as for Springville, Orem and other cities near by. The Deer Creek Reclamation Project on the Provo River will be rushed to completion to help supply water for the new furnaces and mill. The city's application to the Federal Defense Public Works for a grant of \$1,760,000 for power development has been given an A-1 rating.

Completion of the project will take up to 18 months and means that the Utah plant will supply the materials to replace those which now come from the East.

Iron ore for the new plant will come from the vast deposits from Utah's Iron County to the south. Coking coal will come from Carbon County, Utah, and none of these basic materials will have to be hauled more than 100 miles. Columbia Steel for years has been using Utah coal and iron ore to operate the Provo plant, including also one blast furnace, the only such unit west of the Rockies.

Underlying reasons for the sudden switch in plans for these facilities from Pittsburg, Calif., to Provo are readily apparent:

(1) Manufacturing economies to be effected by molten pig iron which can be taken from the blast furnaces to the open hearth furnaces without the necessity of reheating, which would not be feasible if pig iron had to be shipped to California as originally planned. Coke and gas by-products can be utilized on the spot at open hearth furnaces and mills.

(2) As a shipping center, Provo is almost equidistant to Los Angeles and San Francisco with a slightly longer haul to Seattle.

(3) From a military standpoint, the advantage of having this strategic plant located inland, away from the more vulnerable seacoast.

According to OPM, completion of the project will give the Columbia Steel plant five blast furnaces, six open hearth furnaces, one plate mill, one blooming mill, and increased facilities for the production of coking coal and iron ore.

NEW PRODUCTION PLAN

Industry Spurred to War Tempo Will Be Forced to Continue Under Priorities System Over the Next Several Months Until Basic Data Is Made Available to Put the New Allocations Program Into Effect

By WILLIAM J. CASEY

THOUGH it is one of the *musts* of the total war economy of the future, the allocations program decided upon by the Supply Priorities and Allocations Boards still is just policy. Or not much more than that. It will be three or four months yet before the basic information needed to put the allocations program into operation will have been assembled and digested.

In the meantime, industry must live with priorities—in an increasingly drastic form. The new Production Requirements Plan, which now supersedes the Defense Supplies Rating Plan and which may become the main priorities mechanism, gives promise of simplifying paper work and otherwise loosening the red tape in which business is fettered. But apart from that, it will vastly increase the pressure on business to convert to either military activity or production supporting essential civilian activity.

The Production Requirements Plan will serve as a transition phase of the priorities system before we reach full-fledged allocations. But it will also continue to function in a complementary way even after allocations have arrived. These two constitute the main framework within which American industry will be called upon to function for the duration. At least that is the way the responsible

As chairman of the Board of Editors of the Research Institute of America, William J. Casey is in constant and close contact with both Washington authorities responsible for the defense activities of the Government and business leaders wrestling with the problems of a war economy. Recently made head of the Institute's Washington Bureau, he operates between there and New York on a commuter's schedule. The constant flow of information and advice going out from the Institute to its more than 25,000 members places Mr. Casey in a pivotal point in the intricate business-government relationship in these exciting and difficult times. His timely article viewing the future was specially prepared for WESTERN INDUSTRY after the actual declaration of war.—Ed.

authorities in Washington see it now. And they have sufficient experience to be pretty confident of the future pattern.

Now that war is here, without any equivocations or possible dissent, industry regulation by government will be brutal and frank. It will no longer be soft-spoken and timid. The objectives are clear and compelling. They are, quite simply, maximum military production, with assured production of minimum

***Industry Registers for Defense Work—This Scene at the Palace Hotel San Francisco Defense Clinic Shows Businessmen in Direct Touch with Army Officials to Ascertain Needs.**



civilian needs. Of course, each of those break down into a complicated and almost baffling patchwork. But if management keeps them clearly in mind it will be easier to plan for the future.

And, obviously, if management is to steer a course that will permit even of survival on the stormy course we are now sailing, it must know the why and what of allocations. Management must get a firm grasp on the basic procedures under the Production Requirements Plan. It must understand how these two fit together to assure that "first things come first."

From now on, production costs will be less and less dominant in business affairs. Speed in production and the character of that production will become all-important. Your chance to survive will depend less on purely financial considerations than on the usefulness to the war effort of the functions you perform. War puts all the emphasis on maximum production from the available materials. Subsidies and relaxed credit and budgeting restrictions for defense-essential plants will help shift emphasis from "cost" to "production at all cost."

Objectives of Planning

To understand the objectives and intent of the allocations program, it is necessary to realize that of all the shortages created by all-out war, the shortage of materials (some materials) is most acute and most difficult to lick. It is or will be more acute than the shortage in processing and fabricating machinery. More acute than the shortage of skills and trained men. The reasons for this are plain. The victory program, which was laid down before there was a declaration

of war by or against this country, calls for production of something over 40 billion dollars worth of war goods annually during the next three years. The target will unquestionably be raised as we get deeper and deeper into this unpleasant business. But that 40 billion is equivalent to at least two-thirds of total industrial production in 1939. This new production will be superimposed on normal civilian production—or, rather, civilian production which would be vastly inflated if it were not arbitrarily held down. Consumers have many billions of dollars more with which to satisfy their wants than was the case before the defense program got under way.

Allocation is a system of control over scarce materials which releases specified quantities to specified customers for delivery at specified times and for specific uses. All-out allocation will place all scarce materials under this tight control. This necessarily calls for a detailed inventory of all scarce materials—quantities in consumer stocks, producer stocks, in warehouses and elsewhere. Even more important, it calls for accurate data on the quantities of such commodities to come into the market as refining, fabricating, smelting and other producing operations progress. Before there can be complete allocation in those areas marked out for it, there must be trustworthy data on actual and anticipated supply. This is far from available at the moment to the OPM and SPAB authorities.

Enormous as is the task of getting this information, it is but one side of the shield. Equally important to the functioning of an allocations program are dependable estimates of month-by-month requirements of critical materials needed for the production of the military, indus-

trial and consumer products which the over-all production program aims at. These calculations must also include requirements for the essential public services and for repair parts and capital improvements.

And to make this information effective, even after it is assembled, OPM must have developed a mastery of problems equal to the task of digesting and assimilating data reflecting the metabolism of the greatest industrial organization in the world. Sheer size and complexity of the job are such as to dwarf any program of economic planning ever undertaken.

Preference Rating Control

But allocations will never do the entire job. Raw materials can and will be allocated. However, the preference rating system will still be used as the main control in industries where there are many producing units and at levels above the raw materials stage. Allocations involve a freezing of supplies and their subsequent movement in response to direct governmental orders. A more flexible scheduling of production operations will still be accomplished through the rating system.

Once the allocations system is well under way it is certain there will have to be many adjustments, many recastings of the quantities directed to specific points. Management will not be wise to rely blindly on receiving materials in just those quantities and at just the times specified under the initial program. There will still be a premium on keeping production schedules as fluid and flexible as possible, within limits arbitrarily set by urgency of the military program.

Industry commitments are certain to play a vital part in the success or failure of the allocations program. Final responsibility will rest with the industry branches of the OPM. The strings which open the sluices will be in their hands. But industry committees must be depended upon to supply technical information—for objections and suggestions which will make the program work. Close contact with these committees on the part of the individual industrialist will not only assure a voice in the planning; it will also mean that he has easy and immediate access to information he will need if he is to function effectively.

Essential Civilian Industry

While there has been a vague realization since the defense program was first well under way that essential civilian industry must be given the opportunity to obtain materials to keep going, the Production Requirements Plan is the first major step in the actual protection of such industry. Through it, essential civilian industry is now given at least a foothold on the rough road to supplies. The

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Plan contains a new feature, destined to avoid many a headache. High ratings are to be assured producers who sell a good percentage of their output to essential civilian industry.

The Plan calls for two standards by which a producer's business is to be treated: (1) the preference ratings which his orders carry individually, and (2) the end use of his product. To the extent that his business carries "A" ratings, some type of A rating will be carried over to his materials requirements.

In the past, a major problem developed in the B level of orders—the end use of which was essential civilian industry such as power companies, transportation lines, telephone companies, etc. The rating which will now be supplied to a producer will take such end uses into consideration. The Priorities Division will grant the manufacturer a preference rating geared to his needs and the importance of his products. Such a rating will take into account all the factors. This rating can be used continuously over a calendar quarter to obtain critical materials.

However, it should not be overlooked that success in obtaining materials by essential civilian producers depends upon, in great part, increased limitation or curtailment of less essential orders. The squeeze on essential industry will be reduced only in proportion to increased pressure on less essential industries. Consequently, it is of utmost importance that producers acquire essential non-defense industries as customers wherever possible. Their mantle of essentiality can help to protect you against the cold winds of material shortages.

Another important implication in the Production Requirements Plan is the systematic grading of non-defense industries. OPM is responsible for making an elaborate and detailed breakdown of industries according to their importance in civilian life. You can get a higher rating on the basis of your connection, as supplier, with essential industries.

While the allocations program is developing, check carefully the factors which will help you get allocations of scarce materials. Study your activities, your employment picture, your scarce materials needs, substitutes and conservation possibilities. They will all play their part in your ability to ride out the storm.

There is no more authoritative voice on the allocations program than that of A. J. Browning, President of United Wall Paper Factories, Inc., called to Washington by Donald Nelson as a dollar-a-year man to formulate a program. In a recent speech he had the following to say with respect to principles to be followed in setting up the program:

"You study a given industry to see how much of each variety of raw material it uses. You must learn the relative

WESTERN BUSINESS INDEX

Index numbers, 1923-1925
average=100

| With Seasonal Adjustment (1941) 1940 | | | Without Seasonal Adjustment (1941) 1940 | | |
|---|--|--|--|--|--|
|---|--|--|--|--|--|

Industrial Production¹

Manufactures (physical volume)

| | | | | | | |
|--------------------|-----|-----|-----|-----|-----|-----|
| Lumber | 113 | 108 | 92 | 123 | 127 | 100 |
| Refined oils | | | | 188 | 176 | 165 |
| Cement | 169 | 180 | 117 | 195 | 191 | 135 |
| Wheat flour | 97 | 106 | 117 | 115 | 126 | 139 |

Minerals (physical volume)

| | | | | | | |
|-----------------------------------|-----|-----|-----|-----|-----|-----|
| Petroleum | | | | 99 | 98 | 93 |
| Lead (U. S.) ² | | 120 | 117 | | 120 | 117 |
| Copper (U. S.) ² | 150 | 154 | 141 | 154 | 153 | 146 |

Construction (value)

Residential building permits³

| | | | | | | |
|------------------------------|-----|-----|-----|-----|-----|-----|
| Twelfth District | 82 | 89 | 94 | 83 | 99 | 95 |
| Southern California | 88 | 97 | 98 | 92 | 106 | 103 |
| Northern California | 59 | 73 | 102 | 58 | 79 | 100 |
| Oregon | 71 | 39 | 37 | 73 | 46 | 38 |
| Washington | 111 | 112 | 67 | 92 | 121 | 55 |
| Intermountain states | 112 | 133 | 105 | 114 | 175 | 106 |
| Public works contracts | | | | 572 | 820 | 576 |

Miscellaneous

| | | | | | | |
|---------------------------------|-----|-----|-----|-----|-----|-----|
| Electric power production | 271 | 269 | 241 | 270 | 281 | 240 |
|---------------------------------|-----|-----|-----|-----|-----|-----|

Factory Employment and Payrolls⁴

Employment

| | | | | | | |
|---------------------|-----|-----|-----|-----|-----|-----|
| Pacific Coast | 197 | 188 | 133 | 205 | 197 | 139 |
| California | 237 | 225 | 158 | 248 | 233 | 160 |
| Oregon | 137 | 145 | 111 | 143 | 157 | 115 |
| Washington | 148 | 138 | 103 | 154 | 145 | 107 |

Payrolls

| | | | | | | |
|---------------------|-----|-----|-----|-----|-----|-----|
| Pacific Coast | 257 | 240 | 139 | 272 | 238 | 147 |
| California | 307 | 284 | 162 | 323 | 289 | 170 |
| Oregon | 171 | 176 | 111 | 183 | 196 | 118 |
| Washington | 197 | 181 | 106 | 210 | 192 | 113 |

¹Daily average.

²Prepared by Board of Governors of the Federal Reserve System.
(1935-1939=100).

³Includes figures from 197 cities and Los Angeles County, unincorporated.

⁴Excludes fish, fruit, and vegetable canning.

Compiled
by the
Federal Reserve
Bank of
San Francisco
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the
Twelfth
Federal Reserve
District
(California,
Oregon,
Idaho,
Washington,
Utah,
Nevada,
and part of
Arizona)

¹Daily average.

²Prepared by Board of Governors of the Federal Reserve System. (1935-1939=100).

³Includes figures from 197 cities and Los Angeles County, unincorporated.

⁴Excludes fish, fruit, and vegetable canning.

scarcity of each of these materials. You must find the number of man-hours worked in the industry, and you must study the industry to see how many man-hours are worked for each weighted unit of critical materials. In other words, does the industry use much or little material in proportion to the amount of employment it provides?"

He goes on to point out that, other things being equal, a factory which requires 5,000 pounds of copper to operate for a year and which employs only 20 workers won't get that 5,000 pounds of copper if there are ten other factories which can operate for a year with 5,000 pounds of copper and employ 50 workers apiece.

A regard for civilian morale will play its part in the policies to be followed, along with respect for the hard, physical facts.

Study two conversion possibilities. Your best bet is to convert to defense work. But there are many plants which can't be converted to defense work. When this is the case, the second best bet is to convert from a less essential to a more essential type of non-defense activity.

What You Can Do

The purchasing agent has already become (or certainly must soon become) less of a keen, careful shopper, and more of a specialist in priority procedure. And under a full-fledged allocations system other officers and executives will have to show some of the skills of the economist, the production engineer and the salesman.

To obtain maximum allocations of materials justified by the character of your business it will be important for you to build the best possible case which the circumstances permit. Recent priorities orders specifically provide that "the possible dislocation of labor and the necessity of keeping a plant in operation so that it may be able to fulfill defense orders and essential civilian requirements" are to be taken into consideration in allocating supplies. Ability to sell the indirect defense and civilian importance of manufacturing activities are vital under the allocations system.

Ability to show that only a small amount of scarce materials are required to keep a lot of men employed and turn out a large volume of production improves chances of getting a supply really equal to requirements. Data on employment and on gross business per unit of scarce materials consumed will help in this direction.

The extent to which conservation of scarce materials is practiced and to which production has been simplified will also be considered in allocating scarce materials. Donald Nelson now has all the power he needs to carry on his extensive conservation and simplification drive. If conservation possibilities, the use of substitutes, the simplification of design and the reduction of models, sizes and colors have not been tackled already, start right now. Evidence to show diligent efforts and a good record of success in this direction will get a more sympathetic reception for allocation requests.

UPSET

Control of Cons. Aircraft Passes to Vultee in Ten Million Dollar Merger of Two Properties

UNUSUAL development in the annals of finance and industry came to a head last month with the sudden announcement that Vultee Aircraft, Inc. of Inglewood, Calif. would take over the huge Consolidated Aircraft Corp. of San Diego. Euphemistically labeled a "merger" in the announcements to the press, Vultee was nevertheless taking over, sort



PLANEMAKER FLEET
Is Now "Advisor"

of a "tail wagging the dog" affair. Vultee has had an enviable record in producing airplanes for United States defense needs but is hardly of the stature of the company it is acquiring. For comparative purposes, the value of Vultee's output in the first nine months of 1941 was slightly less than a third of that of Consolidated. Vultee's backlog of unfinished business of 178 millions compares with that of 750 millions for Consolidated.

Mystifying factor in the whole proceedings, at least to the public, was the elimination from any managerial capacity of colorful Major Reuben H. Fleet, Consolidated president who will be retained in "an advisory capacity." Consolidated was Fleet's baby. His record as a designer and producer of airplanes was of the best and within six years since he had removed the plant from Buffalo, N. Y. to San Diego he had built up the company to a position as one of the foremost and important suppliers of airplanes for the nation's military arms and for Britain.

To those familiar with the goings on in aircraft production, the elimination of Major Fleet from active management was no mystery and was not unexpected. A situation had been building up over the past year or more and the outspoken Major had lost sight of the premise that if

you do business with the government you can't afford to criticize it.

The Consolidated situation climaxed just prior to the actual declaration of hostilities by Japan. On the surface, any suggestion that Major Fleet was at loggerheads with the United States Army and that it had facilitated disposal of his stock holdings was denied by him. He said: "All of our discussions and plans have been wholly voluntary and the government has injected no dictation of any kind."

On the other hand, many of those in touch with Army circles were not surprised at the upset and would not deny that the doughty Major had placed himself in a not too enviable position in his relations with government departments. Whatever feeling existed dates back to September 1940 when on the occasion of the dedication of a plant addition at San Diego, with Army and Navy officials present as guests, his prepared speech was critical of the government attitude with



RICHARD W. MILLAR
Vultee's President

respect to treatment of the airplane units.

More definite in its aspects was a somewhat similar situation recently in the East, which might be labeled "Fired by the Army." Result of a prolonged strike at the Bendix, N. J. plant of Air Associates, Inc., where the management and labor could not get together, here at the instigation of the Army, directors of the company terminated the services of President F. Leroy Hill and Vice President Harold I. Crow. These were the terms exacted for return to the management of the company's plant which had been taken over by the Army in October.

Major Fleet emerges from the situation with close to ten million cash as the price of the approximate 34 per cent stock interest which he is selling to Vultee. A small portion of this goes to his associates. Vultee is financing the deal through bank loans and public sale of some six millions of preferred stock.

EMPLOYMENT

Domination of Community By a Single Industry to Pose Post-War Problems in California Cities

EMPLOYMENT figures of the major industrial production centers of the Pacific Coast are mounting. Each month shows higher levels for employment which make pleasant reading though in many of the large industrial centers the major portion of the influx of new personnel is accounted for largely by additions to the payrolls of the aircraft and shipbuilding and allied industries. San Diego, now one of the fastest growing communities in the country, is a case in point where the huge increase of employment is due largely to expansion of the aircraft industry.

The Federal Reserve Bank of San Francisco last month took cognizance of the dislocation of the industrial employment balance on the Pacific Coast making public the result of a survey viewing present conditions and pointing to the implications of future problems once the emergency is over. The survey is not confined to the San Francisco area where shipbuilding predominates in the defense picture but views the picture in several large industrial centers.

The domination of a community by a single industry is always a potential source of danger and especially so when that industry is subject to such wide fluctuations in demand as the aircraft industry, the survey points out, maintaining that "the implications which this resulting industrial imbalance bears to the problem of maintaining economic stability are only too obvious."

The survey which dwells mainly on the rapid expansion of the aircraft industry on the Pacific Coast, points out that in Los Angeles county, the number of aircraft workers has increased from 13,000 in 1939 to about 113,000 workers at the present time. During 1939, aircraft production accounted for two-thirds of the increase in all manufacturing employment, becoming the largest single industrial source of employment by the spring of 1940. Upon completion of present expansion programs, the aircraft companies will employ about 40 per cent of all factory workers in this area.

Seattle and San Diego with their huge aircraft plants present similar problems in attempting to view the future Pacific Coast economic picture. Aircraft manufacturing in Seattle dates from 1917, three years before the first permanent aircraft unit was established in Southern California. Here growth was slow for 20 years with total employment below 2,000 by the end of 1937. Rapid expansion started in

1940, with employment increasing from 8,500 in January 1941 to 24,000 at the present time. Plant expansion now under way will require 10,000 additional workers.

The Federal Reserve Bank of San Francisco survey on the dislocation of employment and the implications of post-war readjustment was completed prior to the declaration of war by the Axis powers. All-out defense is now the prime consideration but nevertheless the post-war problems of the communities remain to be faced eventually.—Ed.

BOYCOTT

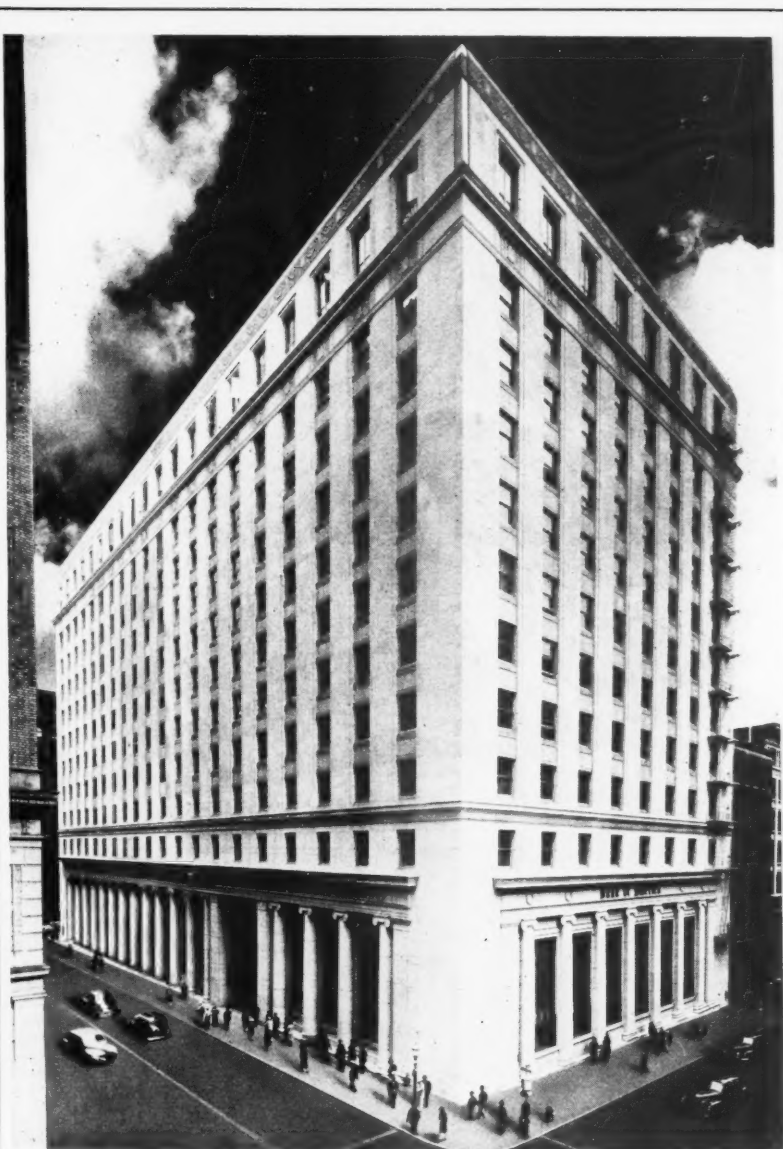
San Francisco Hoteliers Regain Solidarity Against Demand for Closed Shop Made by Employees

OF MORE than local importance, recent developments in the San Francisco hotel strike proved that coordinated effort by employers and a virtual boycott by business could be successfully directed in combating the efforts of hotel employees' AFL unions which had no qualms in putting boycotts and secondary boycotts in effect in an attempt to enforce demands for a closed shop.

That the use of the business boycott had been successful aided by public reaction was indicated with the announcement recently that local capital had reacquired control of the Sir Francis Drake Hotel. As a result, it was announced this hotel would rejoin the ranks of the Hotel Employers Association and thus present a solid front against the demands for closed shop conditions. Public opinion reflected in diminishing business, undoubtedly had much to do with the sale of the hotel. New management announced that the closed shop contract was out.

In the midst of a bitter hotel strike which started August 30, control of the hotel was purchased by C. N. Hilton of Houston, operating a chain of Texas hotels. Newcomer to the ranks of the Hotel Employers Association which, representing 26 San Francisco hotels, was fighting the closed shop demands, Hilton withdrew from the association and announced that he had signed a closed shop agreement. When Hilton bolted the ranks of the Employers Association and signed a separate agreement with the unions, San Francisco business under the leadership of the San Francisco Employers Council struck back by mobilizing business groups in the city to protest an alleged desertion and "sell-out" to labor and the closed shop bloc.

Purchaser of the Sir Francis Drake was Louis Lurie, San Francisco businessman, though it was indicated that control would eventually go to a local group.



BANK OF AMERICA'S NEW G. H. Q.

Marking completion of 37 years of banking, Bank of America last month, on December 9, formally dedicated its new San Francisco head office building at 300 Montgomery Street. Top man at the ceremony, A. P. Giannini, founder of the institution and chairman of the board of directors, proudly announced then that the Pacific Coast had achieved a two billion dollar bank.

Prior to the evening dedication ceremonies, the board of directors held its first meeting in the imposing directors' room on the twelfth floor. Dedication and opening ceremonies were sponsored by the bank's staff and the evening was a housewarming event of proportions.

As completed, the new building extends the entire 275-foot block of Mont-

gomery Street from California to Pine, including at the California Street corner the former Bank of America building which has been merged into the new structure. From the huge underground vaults, protected by doors weighing from 10 to 35 tons each, so delicately balanced that when unlocked they can be swung open by a child, to the twelfth floor solarium, the building throughout is the last word in modern, efficient construction.

A feature of the opening ceremonies was the presentation to founder Giannini by the bank's staff of the wheel of the famous war sloop Portsmouth commanded by Capt. J. B. Montgomery who in 1848 sailed into San Francisco Bay and formally took over California from Mexico by hoisting the U. S. flag in what is now Portsmouth Square.

THREE-DIMENSIONAL SEEING

Modern Production Takes On New Science of Adding Color to Lighting of Plants to Speed Output—Painting Working Parts in Bright Hues Provides Contrasts and Reduces Accidents

By MATT DENNING

Director of Trade Sales, Finishes Div.,
E. I. du Pont de Nemours & Company

MEN, plus machines, control production. Even in this age of largely mechanical mass production, the output of any plant depends on the speed and accuracy of machine operators.

Yet hands of even the most skilled workers are only as capable and efficient as the eyes that guide them. Under perfect conditions, seeing is so clear, sharp and effortless that hands respond quickly and with safety. But—even with today's peak demands requiring maximum human efficiency—many manufacturers fail to provide such surroundings or adequate seeing conditions. While an enormous investment of time and money is made annually to create light in plants and factories, in many cases part of this expenditure is wasted. For all too often this valuable light is "blotted out" by dingy walls, ceilings, floors—and, more particularly, the machinery is so camouflaged in dull green, deep gray or black that it blends into a solid, dark mass.

Even with modern lighting and well-painted walls and ceilings, drab-colored machinery "eats up" much of the light so expensively created. Contrasts are lacking; eyes strain; hands are slowed down. Danger spots are not emphasized and, in too many cases, those nimble hands are maimed. Two basic elements are required to secure strainless, full vision—*color* and *light* in the right combination. In numerous cases in the past, manufacturers have experimented on this theme without the aid of scientific research.

A notable example about twelve years ago was a shoe manufacturer whose machine operators complained of headaches and blind spots. Watching a man at work on a black shoe at a black finishing machine, the manufacturer noticed there was no contrast; the line of demarcation was hardly distinguishable. With a sudden inspiration, he instructed the worker to select a pleasant color from the paint shop, clean his machine and paint it. Before long, other workers followed suit and the result was a factory sporting "every color in the rainbow." With the sudden sharp contrast between leather and cutting edges on the machines, the accident rate fell off nearly 70 per cent; there was less fatigue and fewer "seconds."

Removing Camouflage

As this shoe manufacturer learned, eyes are naturally attracted to the brightest

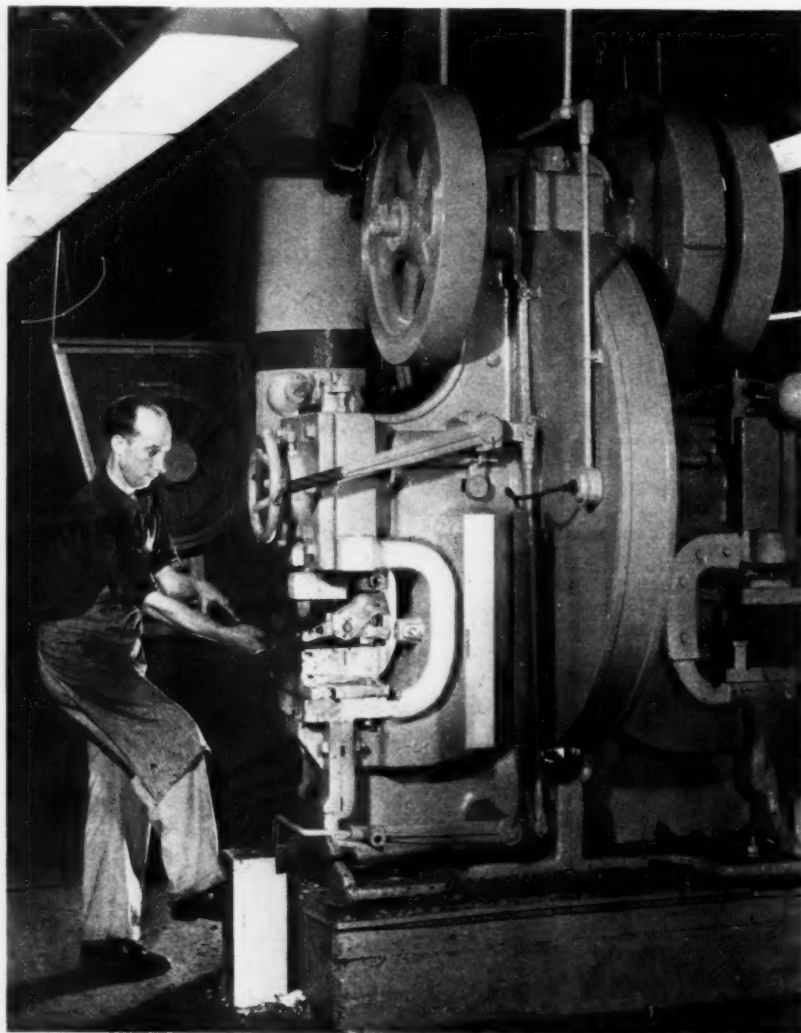
area in the field of vision and automatically turn to the light spot. Yet this principle is generally overlooked and machines are painted in a solid drab color. And, while it has been unintentional, this type of painting has succeeded only in camouflaging machines so far as workers' eyes are concerned, making it difficult for operators to distinguish danger points in bandsaws, lathes, presses and other tools.

As a preliminary "guinea pig," a gray punch-press was chosen for paint study by du Pont technicians. In its original dark gray, the machine was so like the color of the metal undergoing fabrication

that the danger point was far too hard for eyes to separate it from other machine areas. Successive experiments were made by painting the machine with light green, yellow, aluminum, light blue and buff, all of which colors produced more brilliancy than the old gray paint. Photometric measurements of the light reflected by different colors revealed that buff was the best, closely followed by light gray, aluminum and green.

At this point, seeing conditions had been improved by creating a contrast in color and brightness between the work and the background. Going a step further, the working area was separated from the mass of the machine by using a light color near the tool area and a darker shade for the remainder of the machine. A medium gray body color with buff around working areas (both semi-gloss, washable colors) proved to be the best color treatment. In

• In its original dark gray, this punch press, selected as "guinea pig" by du Pont technicians, was so near the color of the metal undergoing fabrication that it was difficult for operators' eyes to separate danger point from other machine areas.



addition to providing more light and better seeing conditions at the actual working surface, this combination attracts the eye instantly and clearly "spotlights" the exact location of the danger points. The action is positive without being too abrupt to be uncomfortable and produces a Three-Dimensional Seeing effect.

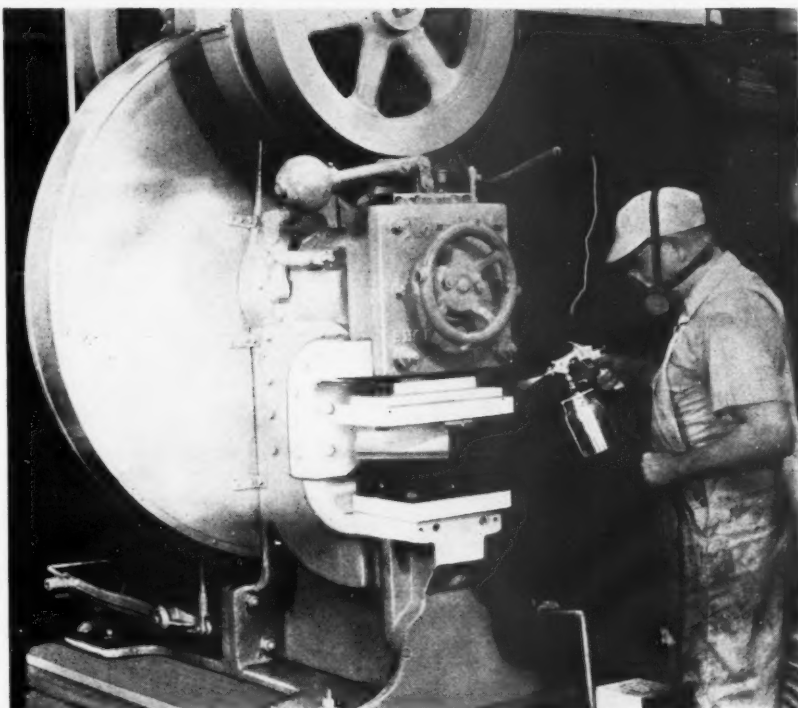
Encouraged by the results of this punch-press experiment, du Pont paint technicians in cooperation with light specialists of the Philadelphia Electric Co. conducted further tests in a modern machine shop. Fifteen observers, including two supervisors, were selected and arrangements were made to paint two machines—punch-press and metal shears—in different colors on alternate Fridays. Light blue, aluminum, yellow, light gray, light green, buff and medium gray were the colors used.

While the opinion was unanimous that all these colors made the operators' seeing task easier than the traditional gray, the preferred colors were all light in tone. The least desirable for use on the machinery under test proved to be green and yellow, although they are useful in other applications.

Time Tests and Reactions

A series of time studies was conducted on a standardized task to ascertain the effect of the various colors upon actual operating efficiency. Tests are made under both mercury and incandescent light for each color. Reactions of operators after a week's experience were then recorded and computed. The winning combination in these careful studies was *buff* for the working area and *medium gray* for the body of the machine—the same combination which, in controlled tests, proved to have the best reflecting qualities.

During the eight weeks of the tests, a psychological survey was conducted among fifteen operators to determine their personal reactions to the various colors being tested. The results were weighed with the other factors of color contrasts, light-reflective factors, and required operating time. By this thorough method, the three-dimensional colors scoring highest on all counts were *buff* and *medium gray*. It was found (1) that the soft contrasts created by this combination were easier on the eyes than abrupt changes in brightness; (2) that these colors were best in reflective qualities; (3) that operating time was faster and more efficient because lighter tool areas concentrated attention on the work and highlighted danger points; and (4) that workers reacted more favorably to the buff and gray combination than to the other colors tested. The chief feature of this color treatment is the three-dimensional effect secured by controlled color contrast. The work in machines so treated stands out clearly in stereoscopic sharpness that cannot be achieved by brightness contrast alone.



• Early in their preliminary work, du Pont technicians repainted this punch press in contrasting colors to remove the camouflage caused by solid, drab colors, thus spotlighting working areas.

The two shades which, in this series of exhaustive tests, made possible this Three-Dimensional Seeing effect have been especially formulated by du Pont and have been designated as *Spotlight Buff* and *Horizon Gray*.

Improving Working Surroundings

After discovering the advantages of three-dimensional painting so applied to machinery, the du Pont technicians and the lighting experts turned their efforts to the study of walls and ceilings. It was felt that, for better seeing and working conditions, the color-treated machinery deserved proper surroundings; that still further benefits could be accrued for the employer, as well as employees, through a complete color operation.

As much care, study and time went into the subject of revamping the background with paint as had gone into individual machines. What colors would give the most pleasing, non-distracting effect and at the same time rob the least amount of light? This question was the primary concern of the color and light experts, who have been working on the entire Three-Dimensional Seeing survey since 1937.

Light-colored paint on traditional brick walls proved to be the best answer to this phase of the problem. It dispelled the monotonous gloom in the over-all picture created by most factory interiors and changed the atmosphere into a bright, cheerful one which makes for more satisfactory working conditions for employees.

Light ceilings, as proved in numerous tests, decreased the "lost-light" problem so acute with dull, dingy ceilings, which ordinarily soak up light like a sponge absorbs water, and thus increased seeing ability of the workers.

When the two-toned machines were combined with light ceilings and side walls and a well-lighted working area, complete Three-Dimensional Seeing resulted.

Paints and Reflection Factors

Properly chosen paint for walls and ceilings not only helps conserve light but also reflects and diffuses it, eliminating objectionable sharp contrasts. Thus, the right paint is a most important partner of light. While requirements vary according to conditions in individual plants, ceilings should, as a general rule, reflect at least 75 per cent of the light that strikes them in order to provide adequate lighting on the working plane. Often higher values are desirable. Painted walls directly in line with a worker's vision should have a light reflection factor of 50 per cent to 60 per cent to provide proper and restful lighting conditions for the operator's eyes. White ceilings and walls reflect a maximum of light. But, in some cases, light colors are preferred to white even at a sacrifice in lighting efficiency. Generally speaking, low-ceilinged areas give greater light diffusion when flat or eggshell finish is applied. But when factory ceilings are excessively high, a gloss

SUBSTITUTES

Curtailment of Vital Materials Due to War Emergency Finds Industry Well Prepared Through Past Research Work in Finding Replacements for Its Needs

white may be the best solution, particularly when such factors as dirt resistance and washability must often be considered. For these qualities, a glossy finish will give the best performance.

Reflection factors of various du Pont white and light-colored paints—determined by a comparison with the accepted magnesium carbonate standard which has a rating of 98 per cent—show that du Pont mill white eggshell finish and the white flat wall finish have higher ratings than any of the others. However, as pointed out previously, a glossy finish, while diffusing less light, has less tendency to collect dirt and can be more quickly and easily washed.

Advantages of Three-Dimension Seeing

With this new scientific use of color and light, manufacturers benefit in four ways: (1) increased production; (2) reduced accident hazards; (3) more comfortable working surroundings for employees; and (4) improved labor relations.

Because Three-Dimensional Seeing insures fast, accurate vision, workers are able to perform their tasks far more quickly. Errors are cut to a minimum; flaws are quickly spotted; and increased production through more efficient, higher-quality workmanship is a natural result.

When machinery is painted with the specially formulated Spotlight Buff and Horizon Gray, the contrast between the machine proper and the danger area is more clearly defined. Under such ideal conditions, workers' eyes function quickly and accurately; their hands respond efficiently and accident hazards are automatically reduced.

The standard of working conditions has increased down through the years, but never have the comforts of employees been more important than today. With the scientific use of paint and light, drab factory interiors, rest rooms and other surroundings are made cheerful and radiant with comfort. Such thoughtful consideration on the part of progressive management is keenly appreciated by workers.

The provision of cheerful surroundings, possibly with Three-Dimensional Seeing, has a definite and invaluable psychological effect on workers and goes far in promoting better labor relations. For the right combination of color and light creates an atmosphere of brightness and makes seeing easier—two great promoters of human contentment and satisfaction. Less eye-strain, greater safety, less nerve fatigue—all contribute greatly to the better morale of the worker.

Note: In demonstrating how "danger points" of working machinery can be emphasized through the scientific use of colors, it is not intended that color be substituted for adequate guarding but rather that it be used to indicate hazardous locations.

The actual declaration last month of a state of war with the Axis powers, Germany, Italy and Japan, and the nation's plants girding for increased production in the coming year finds industry well prepared in the matter of finding substitutes for basic materials which either through scarcity due to the war effort or cutting off of supplies from abroad will not be available. The National Association of Manufacturers has estimated that last year the nation's industrial plants, large and small, spent upwards of \$117,000,000 for research.

Tung oil supplies needed for insulation varnishes for the electrical industry and an important ingredient in paints and finishes which normally come from China, largely have already been replaced by adequate substitute materials—oiticica oil from Brazil, castor oil, soy bean oil, linseed oil and other substances not likely to be limited in supply.

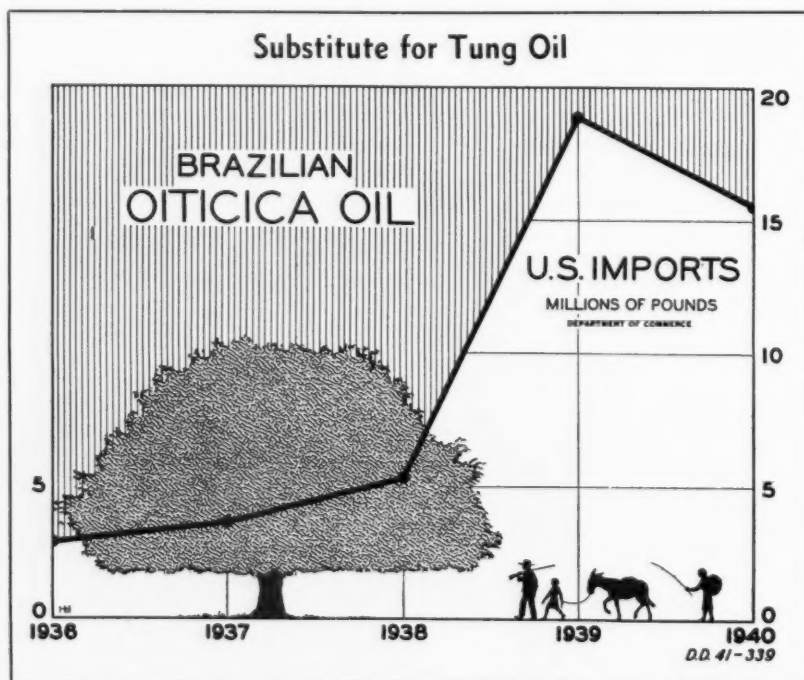
In the defense field, plastics are being used extensively for replacement of metals to an extent where its use for industrial-consumer production is substantially restricted. A new plastic strong enough to be substituted for aluminum in the windshields or streamlined noses of anti-tank or anti-aircraft shells has been developed. Refrigerator manufacturers are substituting rubber ice-cube trays for aluminum

and soon probably may have to find a substitute for rubber. Here, also, enameled steel is replacing aluminum in making other refrigerator parts.

Cotton, glass and asbestos are replacing silk for the production of electrical insulation fabric. Cast iron has its uses in replacing zinc for die casting, replacing also aluminum, brass and alloy castings for the production of electrical lighting lamp parts. Mulberry fibre from Japan used to Jap paper insulation products is being replaced by old rope fibres.

Tungsten steel for production of high-speed tools is being replaced by molybdenum steel with a small percentage of tungsten; nickel steel with molybdenum steel in the production of shafts, bolts, and gears; Nitriding steel replaces chromium steel. High chrome steel is replacing stainless steel in the production of electric range heater tubes; copper brass and enameled steel is replacing aluminum used by one of the largest manufacturers of household electrical appliances.

Due to the enforced building up of a large supply of rubber, estimated as close to one year's supplies, this commodity takes an important part in substituting for aluminum. Plastics replace aluminum but both of these materials are likely to be further restricted as applied to industrial-consumer output goods.



PLANT SAFETY

Good Housekeeping Essential in Retarding Industrial Accident Rate in the Nation's Plants

INDUSTRIAL plant safety assumes added importance in the light of the efforts of the nation's plants to speed up production and meet defense needs. Production must be speeded, but not at the expense of industrial plant safety. Accidents are costly, cause loss of life and injury and retard production.

The huge influx of new and untrained help into many plants already has demolished safety records in many of these plants. Industrial plant safety education for employees must be a vital part of the routine of every industrial plant, large or small. Goggles, leather coats and gloves, tin hats and safety shoes, of particular types, must be provided to fit the needs of individual plant operation. But no less important is the subject of "plant housekeeping" to prevent accidents. Many plants have "good housekeeping" committees continually functioning, composed of executives, foremen and designated employees.

Plant housekeeping is one of the important factors of accident prevention. Men trip over loose objects on floors, stairs and platforms. They are hit by articles falling from above; they slip on greasy, wet or dirty floors; they run against projecting, poorly piled or placed materials; improperly piled or supported materials fall on them; they step on or tear their hands on projecting nails.

Plant housekeeping is more than cleanliness. It is cleanliness and order. A plant is in order when there are no unnecessary things about, and those that are necessary are in their proper places. If a plant is clean, floors non-slippery from grease, light bulbs, windows and walls clean and well painted, machine equipment kept neat and in order, and if aisles are properly marked and operations are carried on in an orderly manner, we have good housekeeping. Where we find these conditions, we find competent management and a low accident rate. For good housekeeping and orderliness are fundamentals of good management.

Good housekeeping cannot be had by an occasional grand clean-up. It must be planned for, practiced continuously. When one wishes to get improvement in housekeeping, the first thing to try to get is a thorough clean-up, but unless the management accepts the idea of getting a reasonable degree of order and system into all operations, conditions will soon be again as they were before. But if in addition to a clean-up, the management

will adopt a policy of searching out and correcting conditions that produce a certain disorder, and will undertake to plan all operations systematically, lasting improvement will result.

Bad housekeeping is the major cause of fires, for a very large proportion of plant fires start in rubbish or in oil-soaked clothes, or are made more serious by the presence of unnecessary inflammable or readily combustible materials on which to feed.

While every employee should wish to do his part toward keeping his work place clean and orderly, it is primarily a duty of management. For the management must plan all operations that they may be

orderly—it must provide storage places for materials, racks or holders for tools and portable equipment or containers for materials in process. Supervising management must see that each day housekeeping and order are maintained as fundamentals of all that is done. Finally, the management must train each employee to do his part, for a single bad housekeeper in an establishment not only leaves much disorder in his path, but sets an example disruptive of the morale of all.

The need and fundamentals of good plant housekeeping are supplied by R. P. Blake of the U. S. Department of Labor, Division of Labor Standards, Washington, D. C. Mr. Blake, noted writer on

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industrial plant safety methods, has prepared a wealth of material which is being used by the Department of Labor throughout the country for the education of management and employees in safety methods.

The more important details of good plant housekeeping are outlined by Mr. Blake, as follows:

Handling, storage and placing of materials, articles and supplies: Satisfactory control requires careful consideration of all factors of tonnage and volume of materials to be handled, the amounts required at the successive steps of manufacturing process, allowance of the spaces necessary and the methods to be used in handling and transporting the materials and articles.

Methods of piling materials and articles: These must be worked out for each class of material or article. Important points here are: Height of pile, strength of support, evenness of support and stability and piling of small articles in containers suitable to the nature of the article.

Tool housekeeping: Racks and holders suited to the size and shape of the articles should be provided for all hand tools, jigs and such machine fixtures as chucks, cutters, and blades. Frequency of use, value of article, possibility of damage and the system of maintenance used will determine the location of such racks. Obviously, tools frequently used at a bench or machine should be provided with racks or holders on the bench or at the machine. Wheeled racks, holding a set of the tools and parts needed at a given machine or station are often very helpful.

Disposal of scrap and waste: The old way is to let the floor catch the waste, and then clean it up from time to time. Competent management estimates probable waste in advance, provides suitable means of collecting it as it is produced, and disposes of it in the most economical and orderly way possible. An intelligent interest in keeping waste and scrap down helps in both safety and profits.

Clear marking of aisles and of spaces reserved for storage with prohibition of piling or placing materials or articles in aisle space facilitates operations and helps prevent accidents.

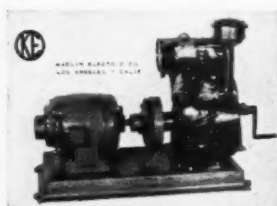
Leaks, drips and spillage: Oil pans, splash guards and drip pans can be used to keep oil off the floors. Proper means of oiling and good containers reduce dripping. Means of handling liquids should take spillage into account. Good container construction reduces leaks.

Width and layout of aisles: No specific rule can be laid down here though it is well to point out that aisles too narrow for safety are also too narrow for efficiency. Too narrow aisles is a very common fault. Aisles carrying considerable

power truck traffic should be three feet wider than twice the width of the trucks used.

Layout of machinery and equipment: This is, of course, a function of production rather than of housekeeping as such, yet the provision of adequate space and proper arrangement of the various production units are so vital to good housekeeping and order that it cannot be overlooked. A common mistake of management is to add machines or other production units to already well-filled floor space, thereby not only increasing the accident hazards but often decreasing the efficiency of the employees of a room due to overcrowding.

When there is a demand for increased production, there also is a constant temptation to relax such good housekeeping rules as those covering the piling of materials and articles. Sometimes there may be no alternative, but usually other means of relief can be found. If a management authorizes the relaxation of any such rules, the return to the proper conditions should be required at the earliest possible moment. Regardless of production necessities, material must not be piled so high or in such a manner as to constitute a hazard. If the operator of a machine requires a definite amount of space for safety in ordinary times, he needs it even more when under the pressure of demand



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for maximum production. In addition to the humanitarian consideration, the employer will be wise to remember that the injury of a trained worker can be especially expensive when production is needed.

Many industrial plants now use special clean-up squads who are responsible for good housekeeping and go from department to department in orderly routine. Mr. Blake advocates special clean-ups in a plant just as these take place periodically in the home. Employee interest and cooperation may be stimulated by such announcements as:

"Clean-up Week begins Monday, January 12. Everybody get ready for the grand clearance. Old clothes, greasy rags, waste and junk must go."

FLAME-CUTTING

Oxy-Acetylene Processes Are Particularly Adapted to Metal Working Plants

THE increasing use of modern welding and flame-cutting processes is doing much to speed the nation on its path of national defense. New uses are constantly being found for welding. Military tank bodies utilizing rivets are now being welded, eliminating the danger of flying rivets in combat. In shipyards, small arcs or torch flames cut through beams and steel plates and these sections are later put into position and fused to the ship frame by arc welding.

Particularly applicable to the medium sized and smaller metal working plants, practically all of which will now go into defense work, it is the purpose of this article to review those factors which should be thoroughly understood by all operators of hand cutting equipment and to provide instruction in hand-cutting practices for the beginner. Included here is a review of the elementary principles of oxy-acetylene cutting.

The ease and economy with which iron and steel can be severed and shaped by oxy-acetylene cutting have made the cutting blowpipe an indispensable tool in practically all industries. Typical applications which are being performed in thousands of shops every day include the demolition and scrapping of machinery and obsolete equipment, the removal of rivet heads and stay bolts, and the cutting of heavy scrap to smaller size. Also typical are the removal of gates and risers from steel castings, the coping of I-beams and structural members, the nicking of billets and cropping of blooms. Trimming plate to size, beveling plate for welding, shaping billets for forgings, piercing and cutting holes in plate, and simple or intricate cutting of steel plate and forgings

to practically any size and shape are well-known operations. Some of these operations naturally require a greater degree of cutting accuracy than others. However, in all the work, the accuracy of the cut edge as well as the efficiency of the cutting operation depend largely on using the proper cutting equipment and correct cutting technique.

The theory of oxy-acetylene cutting is quite simple. After a small spot of steel is heated to almost the melting temperature, a jet of pure oxygen is directed against it. The iron and oxygen react instantly, producing so much heat that the iron oxide which is formed melts and flows or is blown away. The heat of the reaction raises the temperature of the next layer of metal and the flowing away of the oxide exposes this metal to the action of the oxygen. The action is so rapid that a narrow kerf is quickly burned through the steel. It is a chemical process pure and simple, and should not be confused with mere melting of the steel. Actually, the steel burns (oxidizes) away.

In the practical application of the oxy-acetylene cutting process, the jet or stream of oxygen which does the cutting issues from an orifice in the center of the nozzle of the cutting blowpipe. This oxygen jet



can be guided along any line desired, whether straight, curved or irregular, and can also be inclined at an angle, as in cutting bevels. The flow of oxygen is so controlled that it is possible to cut even heavy steel sections and still leave only a narrow kerf, or slot. By this method, steel from light sheet to metal of 10 in. to 12 in. in thickness can be readily cut.

Oxy-acetylene cutting, or flame-cutting as it is also called, is limited to iron and steel and metals of iron and steel composition in general. However, these metals are not cut with equal ease, and so, for convenience, the various cutting techniques which have been developed are grouped according to the following classifications:

HAND-CUTTING DATA Including Nozzle OXWELD BLOWPIPES

| Plate Thickness, In. | C-24, C-31, C-32, CW-22* and CW-23* | Oxygen Pressure, Lb. per Sq. In. | Acetylene Pressure,** Lb. per Sq. In. |
|----------------------|-------------------------------------|----------------------------------|---------------------------------------|
| 1/16 | No. 2 | 10-20 | 4 |
| 1/8 | No. 2 | 15-27 | 4 |
| 1/4 | No. 3 | 20-25 | 4 |
| 3/8 | No. 3 | 30-40 | 4 |
| 1/2 | No. 4 | 30-35 | 4 |
| 3/4 | No. 6 | 30-35 | 4 |
| 1 | No. 6 | 35-40 | 4 |
| 2 | No. 8 | 28-37 | 6 |
| 3 | No. 8 | 40-51 | 6 |
| 4 | No. 8 | 51-66 | 6 |
| 5 | No. 8 | 62-80 | 6 |
| 6 | No. 10 | 40-53 | 10 |
| 8 | No. 10 | 55-70 | 10 |
| 10 | No. 10 | 69-88 | 10 |
| 12 | No. 12 | 56-73 | 10 |

*These cutting attachments will cut up to 8 in.

**Acetylene pressures are for C-32 blowpipe only. When other OXWELD blowpipes are used with medium pressure acetylene, use 5 to 8 lb. acetylene pressure for all thicknesses.

Type No. 1 Cutting. Metals falling in this classification are the easiest of all to cut and include in general the plain carbon steels, such as ordinary structural steel and tank plate, and the low alloy steels, such as the high strength structural steels. Except in extra-heavy sections, they are readily cut with a constant forward motion of the blowpipe.

Type No. 2 Cutting. This type is known commercially as oxygen-lance cutting. It uses a length of small-size steel pipe instead of a hand-cutting blowpipe to perform the cutting. The process is generally used for deep cutting holes and extremely heavy thicknesses beyond the normal range of cutting blowpipes, and to augment hand-cutting operations in heavy thicknesses.

Type No. 3 Cutting. Cast iron falls in this group, as do several high-alloy steels. They require more preheat for cutting, as well as a special oscillating motion of the cutting nozzle.

Type No. 4 Cutting. Metals in this group include stainless steels and other high-chromium steels. Special preheat and cutting techniques are required.

Type No. 5 Cutting. This is a combination type of oxy-acetylene cutting (sometimes called flux-cutting) which uses readily cuttable steels like tank plate to aid in the cutting of steels of lower cuttability like stainless steel. The steel that is hard to cut is placed beneath the steel that is easy to cut or is sandwiched between two pieces of steel that are easily cut. Sometimes welding rod and powdered flux are used with this type of cutting.

This material outlining the principles of oxy-acetylene cutting and suggestions for practical use were furnished by the Linde Air Products Co., affiliate of Union Carbide & Carbon Corp., New York City.

WESTERNERS AT WORK



A. T. MERCIER
Heads Southern Pacific

IMPORTANT news to Pacific Coast business and to railroaders, **Armand Theodore Mercier** in mid-December was named president of the **Southern Pacific Co.** At the same time he was elected a member of the board of directors and of the executive committee. Coincidentally, elevation of Mr. Mercier to this important post was made on the 60th anniversary of his birthday.

Since the death of the late **Angus McDonald** in November, Mr. Mercier has been acting head of the transportation unit and his appointment to the top post was no surprise. **W. A. Worthington**, senior vice president who would normally have been successor to the late Mr. McDonald but who now has reached the retirement age, is understood to have indicated that he desired that the post should fall to Mr. Mercier.

In his long service with Southern Pacific since 1904, Mercier has had broad experience in all phases of the company's far-flung operations. As an engineer, he has personally supervised the construction of many of the road's important projects. As an operating man, he served both as division superintendent and as general manager of the operating department. In the executive and administrative field, he has headed a number of Southern Pacific subsidiary units as well as working closely with the late President McDonald.

Always a good mixer and interested in the people with whom he has worked, Mercier is credited with knowing as many of the 60,000 employees of the road by name as any man in the organization. A native of New Orleans, he graduated from Tulane University in 1903 as civil engineer. He came West in 1904 to join the railroad as a transitman and clerk.

Recognition of his all-round abilities as petroleum executive, **W. C. Whaley** has been appointed General Manager of the California operations of the **Barnsdall Co.**, with headquarters in Los Angeles. He succeeded **R. A. Broomfield, Sr.**, who retires. Whaley has been with the Barnsdall organization since 1924, and last year was elected a member of the company's board of directors. He also holds the office of Vice President.

A native of Santa Maria, Calif., Whaley's first job was that of a laborer for the Commercial Oil Company at Coalinga, and later, in 1912, he went with the Honolulu Oil Co. From 1915 to 1924, with the exception of two years spent in the U. S. Army, he worked for several oil companies in California and in eastern states. In addition to his job with Barnsdall,



W. C. WHALEY
New Job with Barnsdall

Whaley is president of the California Petroleum Safety Board, a co-operative industrial safety group of independent oil units. He also is a member of the Conservation Committee of the California Oil Producers Association, and chairman of its allocation sub-committee.

The American Telephone & Telegraph Co. in New York reached into Pacific Telephone & Telegraph Co. territory last month for executive material when it drafted **M. R. Sullivan**, designating him first Vice President. Sullivan will fill the post left vacant because **W. H. Harrison**, eastern executive, was granted leave of absence to head up the production division of OPM. Sullivan resigned his Pacific Coast duties last month to be Vice President of the American Telephone & Telegraph Co. in New York, and tempo-



F. D. TELLWRIGHT
Pacific Telephone

rarily will be in charge of operations and engineering. At San Francisco, Pacific Telephone filled the post left by Sullivan and advanced **F. D. Tellwright**, General Manager of the Oregon Division. Tellwright, who in 17 years had risen from a plant department timekeeper to a vice presidency last January, also had been chief engineer of the Washington-Idaho area.

Made Chief Engineer

The appointment of **George Tharratt** as Chief Engineer of **Adel Precision Products Corp.** of Burbank, Calif., was announced last month by **H. Ray Ellinwood**, President. The company is engaged in producing aircraft accessories. Tharratt succeeds **Lynn Reynolds**, who recently was made Vice President and production manager. For the past three years, Tharratt has been head of the production illustration department of **Douglas Aircraft Co., Inc.** In that capacity he developed new techniques for illustrating various production steps, a method which it is claimed has eliminated the use of blue prints. The illustration technique has enabled new and inexperienced workers to become efficient quickly in aircraft assembly work.

A. A. Hoffman

A. A. Hoffman, California manager of the **American Potash & Chemical Co.** plant at Trona, Calif., has resigned and his duties have been taken over by **R. W. Mumford**, Vice President and Consulting Engineer. Mr. Hoffman resigned because of ill health.

New Western Pacific Job

Henry E. Poulterer, who became vice president in charge of traffic of the Western Pacific System at San Francisco on December 1st, is a native Oregonian, born in Portland. In 1906 he went to work for the traffic department of the Union Pacific Railroad at Portland and, but for a few months spent in the traffic department of the Port of Portland, was continuously associated with the Union Pacific in various capacities at Portland, Omaha, and Kansas City until 1931, when he was assistant general freight agent of that road in Omaha. That year he accepted the position of assistant freight traffic manager with the Western Pacific, becoming freight traffic manager in 1937.

The elevation of Poulterer to the vice-presidency has been warmly received in the industrial and railroad fraternity alike, as well as among his associates in the Western Pacific, for all of them have found him to be a straight shooter, gifted with an understanding of the other fellow's problem. His colleagues say Poulterer is one of the hardest workers with whom they were ever associated and he is a very popular "boss."

His work in past years has been too exacting and absorbing to permit much time for recreation or hobbies, but he can frequently be found at one of his luncheon clubs studying the game of dominoes and is gradually earning the respect of his opponents in the gentle art of building fives.

New Shell Vice President

Appointment of W. P. Gage as Vice President in charge of manufacturing and technical development of the Shell Oil Co. was announced last month. Gage formerly was manager of Shell Oil Co. Development division in New York City. He will be located in the San Francisco headquarters of the company, and will supervise improvements and additions to plant facilities for the production of chemical by-products of petroleum in the three Shell chemical plants on the Pacific Coast. Starting as a chemist with Shell in 1929, Gage later was placed in charge of the experimental laboratory. In 1939 he was appointed head of the development division of the manufacturing department. Under his direction, new units were developed to produce hi-octane gasoline for use in national defense.

Maybury Heads Unit

The Associated Chambers of Commerce of Washington State last month closed their annual meeting in Spokane with the election of Charles Maybury, Olympia business man, as President for 1942. J. I. Kinman of Spokane was named first Vice President; Henry J. Gille of Seattle, sec-

ond Vice President, and E. R. Fetterolf of Tacoma as Secretary-Treasurer.

New L. A. Chamber Head

Vice President Carleton B. Tibbetts of the Los Angeles Steel Casting Co. last month was nominated to be the 50th President of the Los Angeles Chamber of Commerce, succeeding J. A. Hartley, President of the Braun Corp. The latter was named as treasurer for the coming year.

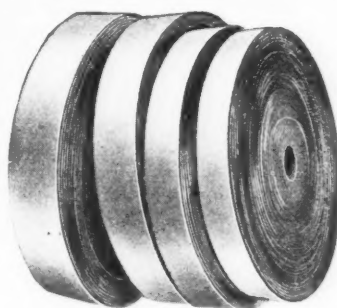
Nominees for the three vice presidencies in 1942 are Neil Petree, President of Barker Bros.; W. C. Mullendore, Executive Vice President of Southern California Edison Co., and Asa V. Call, Execu-

tive Vice President of Pacific Mutual Life Insurance Co.

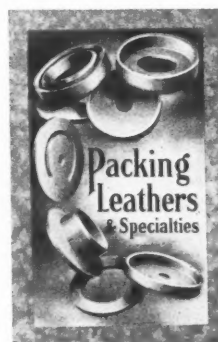
Mr. Tibbetts, the nominee for President of the Chamber for the coming year, was President of the Metal Trades Manufacturers Association for seven years. He is a former Vice President of the Merchants & Manufacturers Association of Los Angeles.

Heads Bedding Unit

Leo J. Simon, President of the Simon Mattress Manufacturing Co. of San Francisco, was elected President of the National Association of Bedding Manufacturers at the 26th Annual Convention recently held in Chicago.



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SIX YEARS ago, after a long, harassing depression battle to keep its head above water, one of the West's most colorful railroads, the **Denver & Rio Grande Western**, was placed under supervision of the Federal Court. Its income failed to balance its outgo by a wide margin. Its physical equipment had run down. Its employees were dispirited. Its outlook was far from bright. The Rio Grande was a mighty sick railroad.

Then something happened. The Federal Court named two hustling Colorado businessmen as trustees for the road and promised them the court's full support in a healthy program of rehabilitation.

They got action! In the brief space of six years, the two trustees, **Wilson McCarthy** and **Henry Swan**, have galvanized the 70-year-old railroad into action. Up and down the line they have gone, strengthening here, rebuilding there—until the total sum they have laid out, under Federal Court supervision, has reached about \$24,000,000.

For this money, plowed in where it would do the most good, they have given the Rocky Mountain West a completely



HENRY SWAN
Rio Grande R.R.

rehabilitated railroad, with much new and modern equipment, stepped up freight and passenger service and gathered about them a staff of employees that is right up on its toes, from track walker to general manager. All are proud to be working for the Rio Grande.

Two factors have aided mightily in the Rio Grande's spectacular comeback as a transportation system of first importance in the West. First, the recovery of business generally in the area during the last six years; second, but very important, the Rio Grande's strategic location to fit squarely into the Government's war program.

The railroad's rehabilitation was timely. The outbreak of war finds it fully equipped to represent an important cog in the tremendous war machine of the United



WILSON McCARTHY
Rio Grande R.R.

States. It serves two vast plants engaged in the manufacture of small arms and munitions—one at Denver, the other at Salt Lake City. These plants together cost \$50,000,000. The railroad serves the important steel-making plant of the Colorado Fuel & Iron Corp. at Pueblo and will serve the new steel plant to be built at Provo, Utah. It serves other great industries, including Utah's vast coal-producing sections and those in Colorado. It serves too a vast area rich in agriculture and farm products—the "bacon and beans" for army camps—and it serves the west's principal sheep and cattle markets.

Studebaker Promotion

One of the West Coast's major automobile plants, the Studebaker-Pacific Corp. factory at Los Angeles, has been converted to defense production and is turning out parts for fighting planes and soon will be making shells, bombs, bomb fuses and probably guns and army trucks. **Stanley Whitworth**, Studebaker Vice President in charge of production, announced that **Wallace T. Miller**, formerly of Detroit, had been appointed defense liaison representative. **Elmer Knox**, Studebaker technical executive, has been put in charge as superintendent. Prior to conversion of the Studebaker plant to defense work, the Los Angeles unit manufactured cars for distribution in Utah, Idaho, Nevada, Arizona, Washington, Oregon, and California.

Harry Camp to OPA

Harry Camp, San Francisco business executive, has been named Regional Director of the Office of Price Administration and is opening a regional office here with an anticipated personnel of from 150 to 175. The OPA is planning to open field offices in Los Angeles, San Diego, Seattle,

Spokane, Portland, Phoenix, Boise, Reno and Sacramento.

Camp is taking a leave of absence as executive vice president of the Consolidated Millinery Co. to devote his full time to directing OPA in California, Oregon, Washington, Arizona, Nevada and Idaho.

"Our policy," Camp said, "will embrace the educational phases of the price program, aid to business in the interpretation of price schedules, and investigations of price violations."

Railroader

Malcolm W. Roper, who became Freight Traffic Manager of the Western Pacific system on December 1st, is one of the youngest traffic officials in United States railroad circles, boasting thirty-six years, half of which have been spent in the service of the Western Pacific, his first and only employer.

Roper, a native San Franciscan, crossed the bay to Alameda for his high school training, following which he returned to enter railroad service. As assistant general freight agent and assistant freight traffic manager, he has accomplished much for the Western Pacific in his handling of rates and divisions through his concentrative ability.

Surveys Housing Units

Robert A. Dier, Associate Director of the Homes Registration Division at Washington, last month conferred with Southern California Defense Housing officials viewing the general details of work in this area. At conferences held at the Biltmore Hotel in Los Angeles a concrete plan for Southern California was worked out under **Ray Brummett**, field representative for California, Arizona, New Mexico and Nevada. Dier said that major concern of the registration service is to avoid unnecessary use of critical materials for new housing projects by using present facilities as far as possible.

Oakland C. of C.

Acting to fill vacancies on its board of directors, the Oakland Chamber of Commerce last month named eight new board members. The announcement was made by **Alfred J. Lundberg**, President, and the directors elected for three-year terms were installed on December 15. The new directors are: **Otto H. Fischer**, Union Diesel Co.; **H. R. Higgins**, Rosenberg Bros. & Co.; **Morris A. Penter**, Oakland Post-Inquirer; **Edgar B. Jessup**, Marchant Calculating Machine Co.; **William F. Reichel**, William F. Reichel Co.; **Kenneth Gelwix**, American Trust Co.; **Weller Noble**, Pacific Guano Co.; and **Louis Scheeline**.

LABOR—FROM LEFT TO RIGHT

COROLLARY to the declaration of war with the Axis powers, labor strife on the Pacific Coast subsided considerably, with no major strikes affecting defense production in effect after the war got under way. Promptly following the declaration of hostilities, a projected nation-wide walkout of the United Welders, Cutters and Helpers Union which had been called early in December was rescinded. This walkout for a time had threatened to interfere with the operations of important aircraft and shipbuilding plants scattered from San Diego to Seattle.

Important as affecting all Pacific Coast ports and calculated to raise production on the docks to maximum efficiency for the duration of the war, was a plan proposed by CIO Leader Harry Bridges, which, he said, "might end seven years of labor strife on the Pacific Coast waterfronts." Representatives of the Pacific Coast Waterfront Employers' Association discussed the plans at meetings with the CIO International Longshoremen and Warehousemen's Union, attempting to reconcile differences in the Bridges proposal with plans being completed by the employers' association. The ILWU proposal sponsored by Bridges called for the appointment by that organization and the employers' association of one or more representatives to form a joint council charged with and responsible for securing maximum production from cargo handling for the maritime industry. It also was proposed that the U. S. Maritime Council should appoint one or more of its representatives to act on the board.

Labor Peace Formula

Meanwhile, at San Francisco, an overall formula for industrial peace for the duration of the war was submitted to city officials by Almon E. Roth, President of the San Francisco Employers' Council. The plan in effect suggests that everything but wages and hours be frozen in existing status for the duration of the war. Wages and hours would continue to be the subject of negotiation between employers and the unions. In the event of deadlocks in negotiations, disputes would be submitted to conciliation; failing adjustment by conciliation, moot points would go to arbitration.

Declaring that strikes and lockouts interfering with the successful prosecution of the war must be eliminated, the Employers' Council formula advocated (1) neither labor nor management should be permitted to take advantage of a national

emergency to demand or secure concessions or changes of position on matters not directly related to and resulting from the war economy. (2) It is fair and logical to ask both management and labor to declare a moratorium on all controversial issues other than wages and hours for the period of the emergency.

From Washington came word that the executive council of the American Federation of Labor proposed that a "no-strike" policy be applied to defense industries for the war's duration, "except where mediation, conciliation or arbitration is refused by employers." At the same time, the council asked that the standard forty-hour work week be maintained and protected as a basis for wages paid, and that the standard rule for overtime pay must be observed.

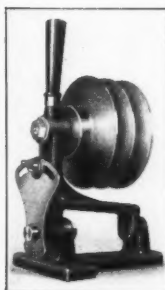
S. F. Hotel Strike

In Southern California and in the Pacific Northwest, labor strife was confined to a few inconsequential instances of localized differences with employers. However, at San Francisco, even the declaration of war had no appreciable effect on two of the strikes important from a local standpoint—the hotel and department store strikes. Eighteen major hotels of the membership of 26 of the Hotel Employers' Association continued to be picketed, which, however, caused no appreciable effect on the business of these hotels. A major victory was won by the hotel management which secured a temporary

restraining order from the California Superior Court limiting the number of pickets to five at any one hotel entrance. Appeal to a Federal court resulted in the issue being returned to the Superior Court with a temporary injunction on the limitation of pickets remaining in effect until January 19. The San Francisco Police Department, meanwhile, advised employers affected by picketing that as a war emergency move, it would no longer be able to supply policemen for the protection of order and property. No great disorders were noted following the withdrawal of police.

Dept. Store Picketing

Among the city's department stores, three establishments continued to be picketed, those of the Emporium, Sears Roebuck & Co., and J. C. Penney Co. The attempt to call a strike at the J. C. Penney store, which developed after the earlier walkout called at the Sears Roebuck and Emporium stores, was declared by employees to be something of a fiasco, as less than 15 per cent heeded the strike call. The chief issue in this strike here is on the department store workers' union demand for "maintenance of membership in unions." The unions are demanding that those of its members now employed in the stores must continue their membership, and any new employees must join the union within thirty days or suffer dismissal. The employers declared that these demands in effect called for a closed shop under another guise.



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Prolonged Picketing

Outstanding in the San Francisco labor picture was the prolongation of the picketing of the B/G Restaurant chain which continued despite the rigors of war. Here on December 26, picketing of this restaurant chain completed a seven-month period and the only development of the situation in recent months was notice by the police department after the declaration of war by Japan that it no longer would be able to furnish police protection. At times as many as 14 pickets surrounded each restaurant and the management had claimed that in one instance as many as 30 pickets were on hand at one location.

Aside from the unusual feature of mass picketing over a prolonged period, the situation was not important with only 100 employees involved. Meanwhile, the restaurants continued to do business as usual and the management declared that "no falling-off in business has been noticed." Here the cause of the dispute was the refusal of the AFL restaurant workers' unions to recognize an employees' union as legitimately representing the restaurant chain's employees, alleging that the union of which employees were members was a "company sponsored affair."

Licenses for Picketers

At Pomona, Calif., conservative community in the heart of the Southern California citrus belt, the City Council last month put picketing on a flat business basis. By a vote of 4 to 1, with Mayor James B. Pettit dissenting, the City Council passed an amendment to the licensing ordinance to be effective in mid-January. Here pickets other than former employees of an establishment wherein exists a union

dispute must pay a daily license fee of \$3 for not more than two pickets and an additional \$1 per day for each picket thereafter. The subject of licensing pickets and for a fixed daily fee first received impetus in Shaker Heights, suburb of Cleveland, last October where a straight \$10 daily fee was ordered per picket.

TWI Training

More than 200,000 "lead men" and supervisors in defense plants will be given intensive training during the next six months under an expanded training within industry program. Announcement of the plan was made last month by Sidney Hillman, OPM Associate Director.

Channing R. Dooley, director of the OPM's Training Within Industry branch, said in a report that training programs of this nature had proved highly successful over a four-month test period in New Jersey plants doing defense work. The program in practice consists of five two-hour sessions conducted by men specially trained by OPM in this field and was worked out with the collaboration of labor and management advisors.

These programs are now under way in Maryland, northern Ohio, New York, Texas and on the West Coast. TWI offices are maintained in the larger industrial centers.

Small Plant Survey

Work of surveying 717 small plants in the Pacific western states got under way last month. These plants are those which designated at the Quartermaster Corps booths at the OPM National Production defense clinics held in Los Angeles and San Francisco late in November that they

wished to be surveyed for possible Quartermaster Corps supply manufacturing.

There were 242 such requests from 2900 representatives of factories visiting the clinic in San Francisco and 475 requests from 4175 representatives who inspected the Los Angeles clinic exhibits of materials needed. The start of the surveys was announced by Col. F. J. Riley, Quartermaster Supply Officer at the San Francisco General Depot, Fort Mason.

California Oil Control

Completed last month was the long-delayed plan for governing petroleum production in California. The plan, as submitted by California producers, has been approved by Petroleum Coordinator Harold L. Ickes, Floyd S. Bryant, Vice Chairman of the Production Committee for District No. 5, announced. E. E. Pyles, Chairman of the Committee, negotiated the California oil plan in Washington. A. L. Weil of General Petroleum Corp. of Los Angeles is Chairman of the General Committee for this district. W. L. Stewart Jr., Vice President of Union Oil Co. and Chairman of the Refining Committee; Charles S. Jones, President of Richfield Oil Corp., Chairman of the Transportation Committee, and C. S. Beesmyer of Gilmore Oil Co. and Chairman of the Marketing Committee, outlined the problems of the industry in their particular fields.

Nevada Defense Office

To enable closer contact of Nevada businessmen with the Division of Contract Distribution, a branch office has been established at Reno, headed by Leonard T. Saber of San Francisco, who has been named acting District Manager for the state. The appointment was announced by Colonel Frank M. Smith, Area Manager for DCD at San Francisco.

Treasury War Ruling

Declaration of war last month by the Japanese government was followed quickly by rulings of the Treasury Department clarifying trading regulations with aliens. It was pointed out last month that:

1. Unless it is definitely known that a Japanese name—individual or company—is American, the Treasury Department has advised that business transactions should not be negotiated except on license, application for which shall be made through a Federal Reserve Bank or branch.

2. The United States Department of State has advised that a "proclaimed list" of Latin American firms alleged to have Japanese connections or affiliations is available.

VIEWPOINTS

Readers are invited to give their views and exchange ideas through the medium of the editorial columns of Western Industry. Additional information relating to subjects of articles can be obtained by writing the Editor, using business letterhead if feasible.

Dear Sir: Your letter of December 5 and the December issue of your publication have come to hand.

I notice that it is your intention to change its format from the present pocket size to the larger standard size. Frankly, I believe it will be a welcome improvement. I read the publication with a great deal of interest and find it helpful in a great many ways. The articles give the appearance of being well prepared and up to the minute.

You have my best wishes for continued success. Best regards!—A. J. Gock, Vice Chairman of the Board, Bank of America, Los Angeles, Calif.

Dear Sir: I am delighted to learn that beginning with January 1, *Western Industry* will be changed from the present pocket size to the larger standard size approved by the National Industrial Advertisers Association.

Please accept my congratulations on another step forward and my best wishes for your continued success.—Sidney J. Weinberg, Chief, Bureau of Industry Advisory Committees, OPM, Washington, D.C.

Dear Sir: We have a letter relative to the change of size of your magazine and think that it will be a marked improvement. We look forward to the receipt of your publication each month as it contains many items of interest to this department and hope with your new set-up there will be more news of interest to us.

Every good wish for your continued success.—Colonel F. M. Smith, State Director, Division of Contract Distribution, OPM, San Francisco.

Dear Sir: As an operator of a small business interested and anxious to get into defense work, can you tell me the status of the legality of pooling the facilities of a number of small plants by agreement in an effort to obtain a prime contract. I have in mind the proposals of a number of San Jose businessmen who

combined under what is known here as the "San Jose Plan" to secure a contract for manufacturing gun carriages. Later on, it appeared that there was some question as to the legality of such combinations as likely to run afoul of the anti-trust laws. Any clarification of this situation will be very helpful to me and I know that there are hundreds of small plants which would be interested in some discussion of the subject.—Ben H. Thomas, Riverside, Calif.

It is true that two months ago when pooling of small plant facilities first came into prominence, there appeared to be some doubt as to what attitude the Government would take. It is also true that then there appeared to be considerable reluctance on the part of Army officials to do business with smaller concerns. The San Jose plan has been given the approval of the various Government agencies involved in authorizing or placing contracts. As a matter of fact, since declaration of war, the OPM Division of Contract Distribution has invited individuals or groups desiring to form production associations to contact them for discussion. "Dubious promoters" seeking commissions on war jobs are barred from participating in war production associations, according to DCD. In order to protect legitimate production associations against trouble under anti-trust laws which forbid combinations in restraint of trade, John Lord O'Brian, General Counsel of OPM, and United States Attorney

General Biddle have agreed that organization plans of each proposed association must be approved in advance by OPM and the Department of Justice. Your nearest DCD office is located in the Federal Reserve Bank Building at Los Angeles.—Ed.

Dear Sir: My first copy of *Western Industry*, the December issue, was received recently. I want to tell you that I devoted much of Sunday to a perusal of the magazine and consider the time well spent. I found the issue both interesting and informative.

Even in its present size, it contains a wealth of material which is well edited and should make your Western readers look forward eagerly to the enlarged format which is in the making for 1942.

My congratulations to you on a splendid publication, and all good wishes for continued success.—W. A. Tidwell, Crucible Steel Company of America, New York City.

Dear Sir: Thanks for yours of the fourth. The trend towards decentralization of industry and the present rapid industrial growth in the western states area enhances the value of the job *Western Industry* is doing in chronicling and interpreting the news affecting that region. Though the present pocket size of *Western Industry* is convenient in many ways,

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it's good to know that you are going to the standard magazine format, for it indicates that real progress is being made which will assuredly benefit our western empire. Your confidence and initiative merit complete success. With best wishes and kind regards.—W. C. Mittelberg, General Freight Agent, The Western Pacific Railroad Co., San Francisco, Calif.

Dear Sir: May I congratulate you and *Western Industry* on the expansion program which permits the increase in the magazine's size.

With industrial growth on the Pacific Coast going ahead by leaps and bounds, there is in my opinion an excellent opportunity for a publication such as yours to chronicle the westward march of industry.

With best wishes.—J. Arthur Foristall, J. A. Hogle & Co., Los Angeles, Calif.

Dear Sir: It is interesting to learn that *Western Industry*, the development of which I have been following with unusual interest since you became its Editor, is now taking another forward step by expanding its format from pocket size to standard size. I realize that a proportionate enlargement of other aspects of the publication is involved in this trans-

formation. It seems to me you are wise in making this change as it will afford a greater opportunity in the chronicling and interpreting of industrial news development of the western territory.

May I extend my best wishes to you.
—Eugene Lokey, Vice President, New York Stock Exchange, New York City.

Dear Sir: What is the situation in Japan with respect to its ability to carry on a prolonged war lacking replenishment of petroleum supplies which I understand in the past have come from this country? If any figures are available, I know your readers, including myself, will be much interested in some facts on this situation.
—David Griffiths, San Francisco.

Prior to the presidential order of July 24, 1941, which froze Japanese assets in this country and placed an embargo on exports from this country, Japan was taking 52,000 barrels of oil daily from United States Pacific Coast ports. The country is almost solely dependent on imports of oil to maintain its economy. A very recent survey indicated that normal takings of petroleum from outside sources was 28 million barrels yearly. This country in 1940 (a period when exports were declining), supplied 23 million barrels with smaller quantities from Mexico and the Dutch East Indies. Japan's production of oil is estimated at 2,800,000 barrels, to which should be added supplies from its share of production of the Island of Sakhalin and small output of Formosa which would add 2,000,000 barrels. Oil from Manchurian shale is estimated as furnishing another 1,000,000 barrels yearly, all providing less than 6,000,000 barrels and about 18 per cent of the normal requirements. Dutch East Indies supplies were cut off last summer. Foreign companies under Japanese law were required to keep large oil stocks available to enable them to do business in that country. Storage facilities have been variously estimated as sufficient for from one to two years of normal needs.—Ed.

Dear Sir: Permit me to offer my felicitations and best wishes on the new dress for *Western Industry*. While much can be said on the advantages to the busy reader on the pocket-sized book you have published up to now, I think the larger standard size to which you now are going will give you greater scope in your editorial field.

I know you are doing an excellent job in chronicling and commenting on the news and developments in the West.

Best wishes for continued success.—Reeves Espy, RKO Radio Pictures, Inc., Los Angeles, Calif.

CONSTRUCTION

Activity in the Eleven Western States Reached All-Time Record in Volume Last Year

CONSTRUCTION activity in the eleven Western states, as indicated by the dollar value of construction awards reached an all-time high during 1941. The total value of construction contracts which were awarded during the year just brought to a close exceeded the similar figure for the year 1940 by more than 80 per cent, according to *Western Construction News*, leading construction and engineering publication of the West.

In the past twelve-month period construction projects valued at more than \$1,170,000,000 were undertaken in the West. This figure does not include residential building, commercial building and maintenance or work done by company forces. It does include all types of heavy, or engineering construction projects, including highways, bridges, dams, airports, canals, tunnels, river and harbor work, transmission lines and industrial buildings. Since 1936 construction activity in the West has materially increased each year and total contract awards for 1941 amount to nearly four times those of five years ago.

Nearly every type of construction has increased over the previous year, but largest increases are shown in the industrial building and airport classifications. The financial aid for plant expansion and construction granted by the Federal Government will mark the past year as one of the greatest in Western industrial growth to date. Requirements of military and civilian airports has spurred this type of construction from almost zero to one of the leading classifications.

Although predictions are that private construction work will suffer at least a 50 per cent reduction during the coming year, it is confidently expected that construction of war projects, both military and non-military, will be so greatly increased as to provide the construction industry with still more than during 1941, according to *Western Construction News*.

BLACKOUT

Boulder Dam, the world's largest power plant, on the Colorado River where it forms a boundary between Arizona and Nevada, was blacked out beginning December 7 and will continue under heavy guard indefinitely in the future.

Tourists had been until 5 p.m. (Pacific time) December 7 conducted through the dam and power plant in groups by guides and guards provided by the Bureau of Reclamation, Department of the Interior, which built and is operating the project.

GROWING PAINS

Western Defense

ADDITIONAL plant capacity for the production and fabrication of metals in the Western states area was the major item of expansion announced by the Office of Production Management in those days immediately preceding the declaration of war with the Axis powers. No doubt these authorizations will soon be stepped up. Included in the OPM authorization for projects in the Western states were those providing for a \$9,000,000 aluminum reduction plant at Spokane, a \$5,500,000 aluminum extrusion plant at Los Angeles, a \$22,000,000 aluminum fabrication plant at Fairview, Ore., a \$9,000,000 plant for increasing copper production facilities at Miami, Ariz., and a \$12,000,000 addition to the magnesium producing plant at Permanente, Calif. Somewhat earlier, the OPM after four months' consideration had announced the allocation of \$126,000,000 for increasing the steel-making facilities of the Columbia Steel Co. at Provo, Utah.

Most important adjunct for national defense purposes is the provision after many months of delay for the establishment here on the Pacific Coast of aluminum fabricating plants to produce sheets and bars to be used by the Pacific Coast aircraft plants. Practically all the aluminum which is produced in the Northwest must now go to Eastern plants for fabrication

into sheets for an airplane skin, and into bars from which are produced castings. It is estimated that the two fabricating plants, Los Angeles and Fairview, Ore., will be able to fabricate annually 120 million pounds of aluminum. Present and projected facilities for producing aluminum call for the production of well in excess of 500 million pounds annually on the Pacific Coast.

From Southern California came reports from the West San Fernando Associated Chambers of Commerce that the officials of a Pennsylvania aluminum unit, obviously the Aluminum Co. of America, was viewing plans for the establishment of another aluminum fabricating plant for San Fernando Valley, 30 miles distant from Los Angeles. These reports, however, lacked confirmation, and certainly were not given official approval by the OPM.

Plant Blackout

Focal point of aircraft production, plane plants in Southern California shortly after the declaration of war completed the huge task of covering thousands of windows for night defense work. Most common practice is utilization of a heavy black paint placed over a priming coat. During the first week of war, thousands of employees were dismissed when the blackout warnings came. Only plant

to remain on normal schedule during the first week was that of the Douglas Aircraft Co. at Long Beach. This new unit being completed is completely windowless with adequate light traps on all doors. There are five major aircraft plants in the Los Angeles metropolitan area.

New Motor Plant

The National Motor Bearing Co., Inc., of Oakland last month announced plans for removal of its manufacturing facilities to be housed in a new \$180,000 plant to be erected at Redwood City, Calif. The announcement by Lloyd H. Johnson, President of the company, said

• View of the new Shell Oil Co. pipeline connecting Ventura producing fields with Wilmington, Calif. harbor loading facilities. Eighty-three miles of arc-welded line were constructed in 30 days to meet defense needs.



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the construction would start as soon as plans could be completed by W. H. Ellison, San Francisco consulting engineer, who already has drawn up preliminary plans for the development. The company now is engaged largely in defense work, and has a nation-wide business as manufacturer of oil seals and laminated shims used on automobiles, trucks, tractors, air-

planes, tanks, and gun emplacements. Employees of the firm who now live in the San Francisco Bay area will be transferred to Redwood City. President Johnson said that it will be necessary to build 300 new homes to accommodate the employees at Redwood City, and arrangements are being made to accomplish this.

(Continued on Page 30)

FEDERAL DEFENSE AGENCIES

For quick reference, below are listed the principal defense agency offices which are open for consultation with business and industry:

Division of Information—OEM
SAN FRANCISCO—Dean S. Jennings, regional officer; Harry E. Flanagan, assistant; 260 California Street.

Division of Priorities—OPM
SAN FRANCISCO—Andrew L. Kerr, district manager, Federal Reserve Bank Building. Housing Priorities: James Whiteside.

LOS ANGELES—G. Howard Hutchins, district manager, 1151 South Broadway. Housing Priorities: Kelvin Vanderlip.

SEATTLE—William D. Shannon, district manager, Stuart Bldg. Housing Priorities: Louis Scarbrough.

PORTLAND—J. Fred Bergesch, district manager, Bedell Building.

Division of Contract Distribution—OPM

SAN FRANCISCO—Col. Frank M. Smith, area manager, Federal Reserve Bank Building.

LOS ANGELES—H. M. Craft, district manager, Federal Reserve Branch Bank Building.

SEATTLE—Fred Bold, district manager, Federal Reserve Bank Building.

PORTLAND—S. A. MacEachron, district manager, Federal Reserve Bank Building.

SPOKANE—T. Wilber Weger, district manager, Old National Bank Building.

Division of Defense Housing—OEM
BERKELEY, Calif.—O. W. Campbell, associate regional co-ordinator, 2121 Allston Way.

SEATTLE—Louis Scarbrough, assistant regional co-ordinator, Stuart Building.

LOS ANGELES—Raymond Brummett, field adviser, Homes Registration Office, 4185 Leimert Boulevard.

Division of Training Within Industry—OPM

SAN FRANCISCO—Alexander Heron, district representative, 260 California Street.

LOS ANGELES—William K. Hopkins, district representative, Roosevelt Building.

SEATTLE—General H. G. Winsor, district representative, Stuart Building.

PORTLAND—Laurin E. Hinman, representative, Public Service Building.

Office of Civilian Defense—OEM Ninth Corps Area

SAN FRANCISCO—Jack H. Helms, acting regional director, 233 Sansome Street.

Division of Health and Welfare Services—OEM

SAN FRANCISCO—Richard Neustadt, co-ordinator, 785 Market Street.

Administrative Services—OEM

SAN FRANCISCO—G. M. Stephens, regional administrative officer, 260 California Street.

Division of Labor—OPM

SAN FRANCISCO—James G. Bryant, chairman of the regional labor supply committee; George W. Davis, executive officer of the industrial area committee. Lee R. Smith, labor relations representative; Humboldt Bank Building, 785 Market Street.

LOS ANGELES—Harold Huxley, executive officer of the industrial area committee, Roosevelt Building.

SEATTLE—Ben Deming, executive officer of the industrial area committee, Olympic Hotel.

PORTLAND—James E. Carroll, executive officer of the industrial area committee, Oregon State Employment Department.

Consumer Division—OPA

SEATTLE—Mrs. Beryl S. Gridley, regional representative, 1832 Ravenna Boulevard.

Transportation Division—OEM

SAN FRANCISCO—Richard T. Eddy, district director, California, Arizona and Nevada, U. S. Customs Bldg.

Office of Price Administration

SAN FRANCISCO—William S. Whitehead, price division representative; Harold Swope, legal division enforcement section representative, 260 California Street.

New Coca Cola Plant

The Coca Cola Co. has announced plans for the construction of a new plant at Bremerton, Wash., likely to cost \$250,000. The building will be of masonry with ornate architectural design centered in picturesque landscaped grounds. The company's own architect is drawing up the plans.

Heavy Forging Plant

Commander T. L. Hannah, Inspector of Naval Materials, last month announced the award of contracts totaling \$2,500,000 for the construction of a heavy forging plant at 8531 East Marginal Way, Seattle, for the Navy Department's Bureau of Ships. Isaacson Iron Works, which will operate the new plant, was awarded the contract to furnish and erect the structural steel at a cost of \$321,000. Isaacson, at \$173 per ton, was underbid by Bethlehem Steel Co. at \$167, but won the award because it could guarantee completion of the contract in 160 days, as compared to 227 days for Bethlehem.

Western Gear

Western Gear Works of Compton, Calif., adjacent to Los Angeles, last month revealed plans for the erection of a new factory to cost \$150,000. The plant is scheduled to employ about 300 men to make gears for the Government, and is being financed from Government defense funds through the Bureau of Ships of the U. S. Navy. It is expected that production can be attained within three months. Plans prepared by J. H. Davis, consulting engineer, called for the immediate improvement of about one-half of the eight acres which the company recently acquired at Compton. Temporary offices of the company are now located at 11188 Long Beach Blvd.

Iron Works Expansion

A "three or four million dollar" expansion of the Joshua Hendy Iron Works to provide facilities at Sunnyvale, Calif., for completion of a \$10,000,000 contract to build steam turbines for the U. S. Maritime Commission was announced last month. Construction will begin immediately. The new plant will be the only one of its kind on the Pacific Coast, it was stated. The plant, to be erected on a site of 18 acres owned by the company, may cost up to four million dollars, it was indicated. It is understood that the funds will be provided by the Defense Plant Corporation.

Shipbuilding Plant

Construction of a \$2,500,000 prefabrication and assembly building to speed up construction at the new Richmond Shipbuilding Corp. yards and the nearby plant of the Todd-California Shipbuilding Corp. will begin immediately at Richmond, Calif. This statement was made last month by Russel J. Carroll, President of Richmond Shipbuilding Corp. The company is building 24 cargo vessels for the U. S. Maritime Commission, while Todd-California is building 30 ships for Britain.

Northwest Filter Units

Construction of a modern filter plant on the west bank of the Cowlitz River which would serve both the Longview and Kelso water systems has been proposed to the Kelso city council by Engineer J. Lowell Henderson, of Vancouver, Wash. Henderson told the council he had already discussed the project with Mayor C. C. Tibbetts of Longview. The filter plant that Longview anticipates constructing could be remodeled to meet the needs of Kelso in addition to Longview, and the Kelso filter plant could be held as an auxiliary operation.

• United Air Lines' new administration building at San Francisco with partially completed hangars which will be in operation as West Coast headquarters in March, 1942.



BARGAINS

Lidgerwood Cableway Hoist—200 H.P.
Motor with Control, complete with 2100 feet 2 1/4" Cable and all equipment.

6x4 1/2 Rex Compressor
10'x12' Clayton Compressor
18-H.P. Rego Gas Engine
60" Yoder Throatless Shear
36" Bandsaw
8-ton Yale & Towne Chain Block
Crescent Combination Woodworker
30-H.P. 900 RPM G.E. Motor
150-H.P. 1200 RPM G.E. Motor

LARGE STOCKS

Wire Rope, Chain Blocks, Pipe and Fittings
Belting, Pulleys, Shafting

**SAN PEDRO
PIPE & MACHINERY CO.**

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Tucker 3488 LOS ANGELES

ELECTRIC MOTORS

COMPLETE ELECTRIC MOTOR SERVICE

MOTORS

150 HP 900 RPM 440 V. Type B Fair. Morse
150 HP 1200 RPM 2200 V. Type I Gen. Electric
125 HP 900 RPM 440 V. Type B Fair. Morse
100 HP 3600 RPM 440 V. Type BB Howell
100 HP 1800 RPM 440 V. Type CS Westinghouse
75 HP 3600 RPM 440 V. Type BB Howell
75 HP 1200 RPM 440 V. Type H Fair. Morse
75 HP 900 RPM 440 V. Type I General Electric
60 HP 1800-440 V. Type KT General Electric
50 HP 1800-220/440 V. Type H Fair. Morse
50 HP 1800-220/440 V. Type B Fair. Morse
50 HP 1200-220/440 V. Type CS Westinghouse
50 HP 900-220/440 V. Type KT Gen. Electric
40 HP 720-220/440 V. Type KT Gen. Electric
40 HP 1800-220/440 V. Type CS Westinghouse
40 HP 900-220/440 V. Type CS Westinghouse
40 HP 720-220/440 V. Type KT Gen. Electric
30 HP 1800-220/440 V. Type H Fair. Morse
25 HP 3600-220/440 V. Type H Fair. Morse
25 HP 1800-220/440 V. Type CS Westinghouse
15 HP 600-220/440 V. Type STB U.S.

**LITTLEJOHN-REULAND
CORPORATION**

Rewinding 2855 Santa Fe Avenue Rewinding
Jefferson 5255 Los Angeles, Calif. Jefferson 5255

FOR SALE

2—400 HP 6-cylinder full Diesel Engines
with or without Generators
1—150 KW 250 volt Motor Generator
with 2300 volt Synchronous Motor
2—75 KW 250 volt Motor Generator Sets
1—75 KW 500 volt Motor Generator Set
1—32" x 32" Lathe with Taper Attachment
1—1150' 2-stage 100 lb. Compressor and
Motor
1—30" double end Punch & Shear, heavy
duty
1—360 HP 350 RPM 3-bearing 2300 volt
slipping Motor
1—400' belt-driven Air Compressor
1—10 x 12 3-drum Steam Hoist

SUNDFELT EQUIPMENT CO.

3315 First Avenue South
SEATTLE, WASHINGTON

Metal Concentrating

Location of a chrome concentrating plant at San Luis Obispo, Calif., on city-owned property, south of the city, to cost probably \$40,000, was scheduled last month by L. E. Putnam, San Francisco mining engineer. Putnam said he represented six San Francisco business men who in the past two months had acquired the Castro Mine property west of San Luis Obispo. The plant, according to Putnam, will be used to bring the percentage of mineral in the Castro ore up from its natural average of 30 per cent to above the commercial minimum requirement of 40 per cent, and will use a method whereby the ore is ground and then washed of the superfluous material.

Penn. Iron & Steel

Pennsylvania Iron & Steel Co. at Los Angeles plans to erect the first cold finished bar mill to be located west of Chicago, Samuel Tuch, President of the concern, announced last month. The new plant when constructed will employ 100 persons and will cost \$250,000, providing 40,000 square feet of floor space. The plant, under the management of H. J. Bauman, will fulfill a long-standing need for supplying aircraft, oil tool, shipbuilding and general metal work industries in Southern California, Tuch declared.

Flying Time Cut

The elimination of one stop on the Northwest Airlines route made possible the fast time of 12 hours and 50 minutes from Seattle to Chicago, the airlines officials announced at Seattle. This is the fastest service so far that has been provided connecting Seattle by airline with the major cities of the East.

Sugar Factory

At Nampa, Idaho, preliminary work has started grading for the construction of the Amalgamated Sugar Co.'s new \$2,000,000 beet sugar factory. Work on the large brick office building, which will stand in front of the factory, is to commence at once. The date for the beginning of construction for the factory is not yet known.

More on Coca Cola

The new branch warehouse of the Coca Cola Bottling Co., constructed of reinforced concrete at Long Beach, Calif., was placed in operation early last month. The cost of the building and parking lot exclusive of the site was \$96,000, according to George D. McLean. The warehouse will serve Long Beach and the adjacent harbor area with 43 employees.

(Continued From Page 8)

And all these potentials, like many others, are not carried in the fiscal calculations already suggested in this piece.

We also are told here that old closed, high-cost, marginal mines in the Pacific West have opened and generally are running at capacity. Mercury, 95 per cent of which comes from the Pacific West, has been at almost unparalleled production levels. Late in November copper in the West was bringing 14 cents a pound, and Arizona and Utah, the two greatest copper producers in the United States, were building to a crescendo of operation. Two-thirds of North America's copper usually comes from Arizona, California, Idaho, Nevada, Utah and Washington, and the output was expected to reach even greater levels. But to the mining experts here the real dramatic surprise of the Pacific West is the extraordinary increase in production of aluminum, magnesium, and iron and steel. They tell us wherever there is a mine in the West it is approaching top speed production.

All kinds of foodstuffs will become more pressingly needed for many of the 60 clients to whom the U. S. furnishes lend-lease aid. This will undoubtedly diminish the supply for our own needs. The Pacific West already supplies 53 per cent of all canned goods used by the nation. Over 50 per cent of the canned fish comes from the region; over 70 per cent canned asparagus, 50 per cent canned spinach, 95 per cent dried fruits; all red salmon; practically all the domestic olive oil; most of the prunes. Lend-lease already, before the war started, had demanded 1,400,000 tons of dried, canned and fresh fruit from California, and 2,500,000 cases of canned vegetables. Prices that had already jumped sharply are expected to do more leaping with the

far greater demand upon the Pacific West producers.

A story of self-starting, self-help enterprise that makes Donald Nelson purr like a teakettle comes from California. It gives dramatic point to the oft repeated Nelsonian insistence that the Government will help the small business man who will help himself. F. L. Fulton, at Antioch, Calif., has a small boat yard. Without making any noise about it, he built, on speculation, at his own expense, a 50-ton navy tug. When it was finished he called the navy to look it over. They not only grabbed it and paid for it without debate, but they hustled Fulton to Washington. When he returned to Antioch he had an order for six mine sweepers which will pay him \$800,000.

There has never been a time when the ideal economic integration of industries in the Pacific West could come about with so little real resistance. The old fight by the great economic groups of the East, the so-called vested interests, against "premature" developments in the West, will doubtless be ineffective. The fear of the effect of a full-blown economic organism, in the Pacific West, on the post-war conditions is not regarded as valid, here. The stupendous economic vacuum created by the war across the Pacific is expected to offer a market for all the things and services the Pacific West may be ready to supply. The military need in the Pacific area calls for production of military and civil wares on the spot with materials closest at hand, and close to the area where the need may be, in the Pacific littoral. It calls for a minimum of time-waste in taking goods from the base of raw materials to manufacture, and from manufacturer to the user. The military object is to save time, save handling, save transport space, and get the stuff to its destination as quickly as possible.

MACHINERY SALE

MOTORS

- 1—260 H.P. Synchronous G.E. 225 RPM, 2200 volts, 210 KVA.
- 1—62½-Ft. 25½-inch Double Leather Belt.
- 1—150-H.P. Type B.F.M. 720 RPM, 440 volts.
- 1—50-H.P. Westinghouse, 900 RPM, 440 volts.
- 1—35-H.P. Crocker Wheeler, 1200 RPM, 220 volts.
- 1—200 H.P. G.E. Type I, 600 RPM, 440 volts.
- 1—150 H.P. G.E. Type I, 720 RPM, 440 volts.
- 1—100-H.P. Slip Ring, G.E., 720 RPM, 440 volts.
- 1—50-H.P. Vertical Fairbanks Morse, 1200 RPM, 220 volts, solid shaft.
- 1—75 H.P. Crocker Wheeler, 900 RPM, 440 volts.
- 2—250 H.P. Westinghouse, Type CS, 290 RPM, 2200 volts.
- 1—150 H.P. Westinghouse, Type CS, 1800 RPM, 440 volts.
- 1—150 H.P. Crocker Wheeler, Size 50R, 1800 RPM, 440 volts.
- 1—50 H.P. Westinghouse, Type CS, 1800 RPM, 440 volts.
- 1—200 H.P., G.E. 1800 RPM, 440 volt motor.

GENERATORS, BLOWERS, WATER PUMPS

- 1—30 K.W. A.C., 1200 RPM, 220 volts, 60 cycles, 3 phase Generator, belted exciter.
- 1—No. 70 ILG Blower, 17,430 CFM, direct to 6 H. P. 340 RPM, 3 phase motor.
- 1—20-inch Krogh Split Case Pump, 11,000 GPM at 26-ft. head.
- 1—600 Amp., Western Electric, 32 volt, 850 RPM, D.C. Generator.
- 1—300 H.P. Triumph Water Wheel with governor, 50 ft. head.
- 1—200 K.W. Westinghouse A.C. Generator, 900 RPM, 440 volts, 3 phase.
- 1—50 H.P. Single Drum Mine Hoist.
- 2—75 KVA Transformers, G.E. Type H. 6600 to 120/240/480 volts, 60 cycle.
- 3—75 KVA Transformers, Wagner Type HE, 6600 to 220/440/ volts, 60 cycle.

RELIABLE ELECTRIC WORKS

1831 Q STREET

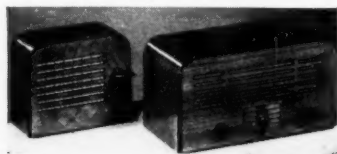
SACRAMENTO, CALIF

THE SHOWCASE

For more complete information concerning any of the products listed in these columns, write to the manufacturer or drop WESTERN INDUSTRY a postcard. The descriptions of the product and claims made are those of the manufacturer.

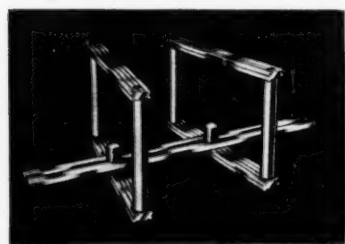
• INTER-COMMUNICATION SYSTEM

—This system's unique versatility speeds up plant production, eliminates time waste, cuts costs, over-rides plant noise, reduces rejects and material waste, it is claimed. It is precision engineered to meet the exacting requirements of diversified production methods of the modern industrial plant, and offers complete privacy of conversations between executives. In most installations, any voice will carry over 50 feet, so workmen may answer without leaving the assembly line or their bench.



The Knight super-selective intercommunication system has $2\frac{1}{4}$ watts power output, enabling ten sub-stations to carry five simultaneous two-way conversations with absolute privacy. Allied Radio Corporation, 833 West Jackson Blvd., Chicago, Illinois.

• **DIE CRADLE**—A handy tool for die-makers was introduced recently. In effect, the tool is a universal parallel unit, adjustable in length to accommodate varying sizes of dies, jigs and metal parts, with parallel vertical supports and parallel top cross-pieces holding the work in a perfectly level position. The new unit eliminates makeshift methods of supporting such work, and assures correct alignment while drilling, counterboring, tapping, milling or grinding. Two thumb screws adjust the die cradle to any desired length. It is made of high grade steel, hardened and ground to close tolerances which assure accuracy. Acro Tool and Die Works, 2814 Montrose Ave., Chicago, Ill.



• **ARC WELDER**—A new 150-ampere direct-current arc welder for use in fabricating bright-surfaced thin-gaged metals, such as aircraft tubings which has a wall thickness of 35 mils, is offered here. Chief among its important features is its extra high instantaneous recovery of voltage (40 to 60 volts) which helps the operator to strike the arc with ease under the difficulties presented by thin metals having a bright, polished surface. Rapid, accurate adjustment of the welding current also is claimed by means of a tap switch and a rheostat; the former for speed in getting wide range adjustments, the latter for accuracy in obtaining the exact number of amperes needed for best results. The equipment is horizontally mounted to assure efficient lubrication and to avoid excessive end thrust on its self-sealed ball-bearings. Cool operation is obtained by means of a fan cooling system, while isothermic relays guard against operation on harmful overloads. Victor Equipment Co., 844 Folsom St., San Francisco, Calif.



• SPOTFACER AND BORING TOOL—

New methods of spotfacing and boring are brought to industry through the introduction of this new product, according to the manufacturer. The B & B, it is claimed, can perform a wide variety of operations and eliminates many extra tools usually required to do certain jobs. The tool consists of a head (or bar) with a cutting blade running through a slot at the end, at right angles. Located on the head is a dial with micrometer readings

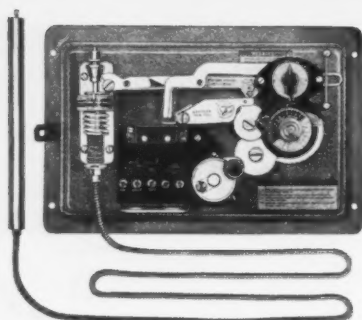
which enables the operator to set and lock the blade securely to precise diameter measurements within ten-thousandths of an inch. By using blades with step formation, many different diameters may be bored; and steps, or shoulders, may be faced at the same time. In addition to conventional boring, this new tool shows many advantages in boring long holes in either forward or inverted direction. Bokum Tool Co., Detroit, Mich.

• **PRODUCTION MILLER**—It is claimed that this automatic model is easy to set up and adjust, and almost effortless in control; that a new man can do good work right from the start, and a skilled man can turn out more work than before.



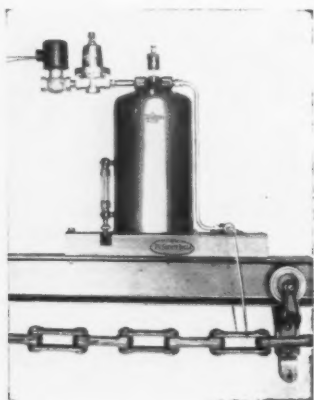
Simply by setting the dogs on the hydraulically operated table, it is possible to rapid traverse, complete the cut and automatically return by rapid traverse to the loading position. Thus the operating cycle is completely automatic, and it also may be set for skip-feed starting. Variable table feeds are available through a variable valve which is readily controlled by turning the dial on the front control panel. Table of this Model No. 118 has a work-holding surface 34 by 10 inches. Van Norman Machine Tool Co., Wilbraham Ave., Springfield, Mass.

• **HEATING REGULATOR**—A new, low-priced heating system regulator which controls heating in accordance with outside temperature and which programs heating according to the hours of activity and outside temperature, has been developed. Known as the Model 7 Tri-trol regulator, it offers in one compact instrument all the various controls and switches

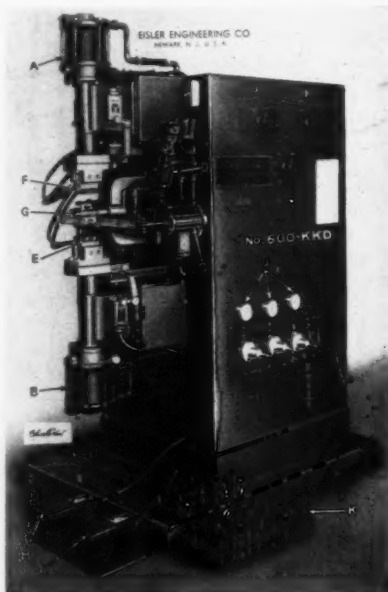


necessary for completely automatic heat regulation. It is particularly suited for multiple occupancy of buildings, such as factories, apartments, offices, etc. This regulator automatically changes the starting time of the system each morning in accordance with every change of outside temperature to assure comfort at the start of the day. Incorporated in this model are such built-in features as a "refueler" or hold-fire switch, an automatic cut-off when outside temperature rises about 65 degrees, and a special four-position switch which provides added flexibility for those buildings which require varied heating programs. Marsh Tri-trol Company, 600 So. Michigan Ave., Chicago, Ill.

• **CHAIN LUBRICATOR**—To solve the problem of lubricating the chain links of conveyors passing through ovens, kilns and other hot zones, this chain lubricator was devised recently. Consisting of a two-gallon capacity tank, the lubricator is hooked up with the plant air line, with an air regulator set at 80 lbs. pressure to insure effective control and operation of the outfit. The air, passing through the lubricator, picks up a predetermined and adjustable amount of lubricant and delivers it, in the form of an oil fog, through $\frac{3}{8}$ -inch O.D. copper lines to both sides of the chain links. The spray of lubricant is adjusted easily to conform with kiln temperature and with chain speed, and the action is entirely automatic. J. N. Fauver Co., Inc., 49 West Hancock Ave., Detroit, Mich.

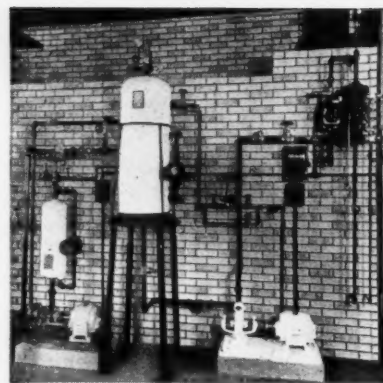


• **PROJECTION WELDER**—This machine is arranged with special welding jigs and fixtures for welding fins to steel tubing. No individual jig is needed for loading the work. There are 56 points of heat control and the transformer secondary, welding dies, and mandrel are water cooled throughout. The illustration is marked to point out the main features as follows: A—Air cylinder for upper welding die; B—air cylinder for lower welding die; C—air cylinder for the ejector mechanism; D—air cylinder for indexing the rotating mandrel; E—lower welding die; F—upper welding die; G—mandrel; H—foot pedal for actuating ejecting mechanism; I—foot pedal for actuating cylinders



A and B; J—pressure gauges for A, B, C and D cylinders; K—finished product. The pressure for each set of air cylinders can be regulated individually to meet any specific requirement. The machine is so wired that the ejector mechanism cannot operate while the welding dies are in motion, nor will the welding dies operate while the ejector mechanism is in motion. The actual welding time is controlled by automatic timing equipment. Eisler Engineering Co., Inc., 740 So. 13th St., Newark, New Jersey.

• **ELECTRIC CONDENSATE RETURN**—Adaptable to any conditions in plants operating up to 250 lbs., the single electric system automatically returns condensate and supplies make-up water to boilers when actuated by mercoird switch at the water column. Make-up water is admitted to the certified A.S.M.E. receiver tank by float-operated valve when condensate reaches a predetermined low level or is insufficient to satisfy the needs of the boiler. The dual system handles both high and low pressure condensate and make-up



water automatically. Both systems are substantially designed and include high grade controls, motors and pumps. W. M. Acker Organization, Inc., Cleveland, Ohio.

• **MIDGET TOGGLE CLAMP**—Furnished complete with spindle and rubber cap, measuring but 4 by $1\frac{1}{2}$ in. high; it is unique in that a pressure in excess of 500 lbs. is claimed for this model. Because of its small size and great holding strength, this Model No. 830 clamp is ideally adapted to aircraft work. Knu-Vise Incorporated, 16841 Hamilton Ave., Detroit, Mich.

• **WATER PUMP SEALS**—This seal contains only two parts, the bellows and the spring. The bellows is an exclusive synthetic rubber compound claimed to be superior for sealing services. The entire unit is spring driven and operates as a driving coupling. The seal does not touch or have a sliding contact with the shaft. The bellows connects two flanged ends. The spring is placed in a fixed position against the inside shoulders of the flanged ends, thus holding the contact facings against the scaling washer on the one end and the driving base on the other. Among other advantages claimed is "blindfold" installation. Seal cannot be installed wrong, either on the assembly line or in the field. Both ends are identical, so either end is right. Crane Packing Co., 1800 Cuyler Ave., Chicago, Ill.



YOURS FOR THE ASKING

1000

• **WELDING PROCEDURES**—Clarifying the proper welding process for a particular metal under various circumstances, a 55-page, spiral-bound book has just been published, which is conveniently grouped. In addition to recommending processes, the book recommends the best filled metals to be used for each process and describes specialized welding techniques not commonly known. In an appendix, data is given for the calculation of electrode and gas welding rod consumption for different types of welds; also comparative welding record sheets for tabulating data which determines the best welding method for a particular job. Air Reduction Sales Co., Lincoln Building, New York, N. Y.

1001

• **DRILLING MACHINES**—To step up production on small-hole drilling and tapping operations, a new series of two three and four spindle drilling machines have been introduced recently. Bulletin No. MS1 contains complete description and specifications. Table weight of the three and four spindle machines is reported at 575 pounds, furnishing a solid support for the smooth movement of heavy jigs, fixtures and parts in production quantities. Each drilling head is equipped with its own motor mounting and a new type of positioning control with crank handle. Atlas Press Co., Kalamazoo, Michigan.

1002

• **DUST COLLECTOR**—"Stop Dust with the Dustkop" is the title of a new, four-page folder in which the manufacturer describes compact, low-cost self-contained unit dust collectors. Specifications of the unit, cut-away showing construction, together with illustrations indicating how the unit is located to collect dust from surface, tool, pedestal and bench and cutter grinders are included. Aget-Detroit Mfg. Co., 958 Book Bldg., Detroit, Mich.

1003

• **ELECTRICAL EQUIPMENT**—Publication GED-978, just issued, describes and illustrates electric equipment available for the chemical industry. Motors, motor control equipment, switchgear, power conversion equipment, and electric apparatus for material handling are discussed in detail, as well as voltage transforming equipment, voltage regulating equipment, power-factor improvement equipment, instruments, and automatic process timing switches. Installation information is given. General Electric Co., 1 River Road, Schenectady, New York.

1004

• **ENGINEERING TABLES**—Bulletin No. 120-A contains helpful information for hydraulic engineers and others. Among its headings are: Capacities of hydraulic rams, discharge of water for circular straight edge orifices, medium carbon seamless steel pipe data, decimal equivalents, circumferences and areas of circles, metric conversion tables, strengths of materials, and useful hydraulic formulae. Watson-Stillman Co., Roselle, New Jersey.

1005

• **MANILA ROPE**—In cooperation with America's defense program, a new booklet has just been issued titled, "The Care of Manila Rope." This booklet discusses the care and handling of Manila rope, and contains many helpful suggestions for getting better wear and service from this product. This advice also applies to rope constructed wholly or in part from other hard fibers. Tubbs Cordage Co., 200 Bush St., San Francisco.

1006

• **MICROMAX TELEMETERING**—A new catalog shows how utility systems and industrial power plants and power purchasers are effecting operating economies by indicating and recording load continuously and automatically. Well-illustrated, this 28-page publication describes equipment which can telemeter over practically any distance—can totalize the load of almost any number and any combination of generators, stations, tie lines, etc., and is easily adaptable to either simple or complex requirements. Catalog N-58-161. Leeds & Northrup Co., 4934 Stenton Ave., Philadelphia, Penn.

1007

• **TEST INSTRUMENT**—The 1942 line of radio and electrical test instruments manufactured by Radio City Products Co., Inc., is presented in a 20-page, illustrated catalog, No. 125, just released. This new line includes more than 40 models of 22 basic test instruments, and each model is illustrated and its specifications presented in concise, time-saving form. Approximately half of the models are general-purpose electrical multi-testers, each providing a variety of measurement ranges equivalent to those of 12 to 35 individual meters. Of particular interest to technical training schools is a series of five tube tester and multi-range instruments kits, including everything necessary to enable students to build their own test equipment. Radio City Products Co., Inc., 88 Park Place, New York, New York.

1008

• **AIR CONTROL**—Catalog No. 10 describes a new line of Industrial Products for use in the control of compressed air. It contains a great number of new fittings and complete air operated machine control sets. In view of present industrial conditions, one of the most important is a line of ready made Air Ejection Sets which have been developed with such versatility that they can be adapted easily to fit the needs of any individual concern. Among the many other products listed is a heavy duty air line coupler, especially constructed to give a kink-free service connection for compressed air hose to air-driven tools. A. Schrader's Son, Department P., 470 Vanderbilt Ave., Brooklyn, New York.

1009

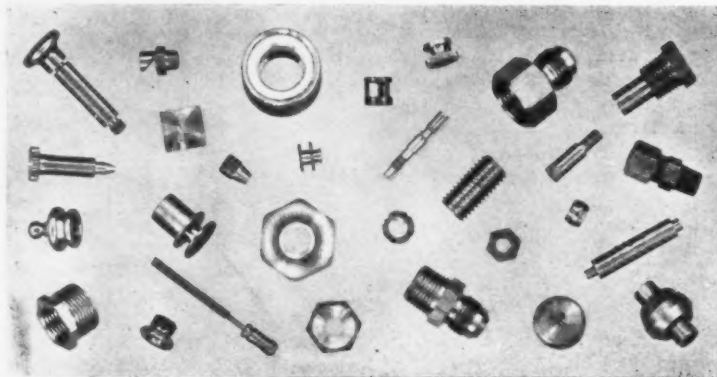
• **KOPPERS' PRODUCTS**—An eight-page folder, summarizing all of Koppers' important products, plants and services, has just been published. The list ranges from Koppers' coals and coke to light oil plants and purification systems; from valves, castings, forgings, couplings and piston rings to roofing, tar-base paints, and pressure-treated timber products. Two pages are devoted to the uses, technical description and characteristics of tar acids, tar acid oils and coal tar solvents. Tar and Chemical Div., Koppers Company, Koppers Bldg., Pittsburgh, Pa.

1010

• **HARDSTEEL DRILLS**—A free instruction book, telling how to use hard-steel drills and how to grind them, has been made available by the manufacturer. It is claimed that this new type of drill will cut hardened steel of any type, temper analysis, and that it successfully has been used on carburized, oil hardened, water hardened, cyanided and nitrided pieces of high carbon, high chrome, and high speed drills of every degree of hardness. They also have been used as salvage tools, for drilling holes in dies, tools and pieces of machinery which have been hardened and cannot successfully be annealed for machining. Though these drills are a new innovation, it has been reported that they already have eliminated many expensive grinding and machining operations, and are coming into more general use as production tools. The Black Drill Co., 5005 Euclid Ave., Cleveland, Ohio.

If any of this material interests you, jot down the numbers on a postal card and send to WESTERN INDUSTRY, 503 Market Street, San Francisco. We will see that full information reaches you.

AUTOMATIC SCREW MACHINE PRODUCTS



MANUFACTURERS
of
SPECIAL MACHINES
TOOLS and DIES
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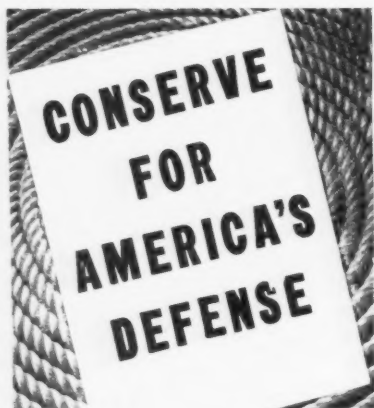
CCA

Western Industry has just been accepted as a member of the Controlled Circulation Audit, Inc. In this way *Western Industry* joins that group of alert and reputable publications which have encouraged advertisers to exercise their right to know all of the facts regarding circulation.

In almost all modern industry there is a desire to furnish buyers with complete knowledge of the articles they plan to purchase; for by so doing the manufacturer obtains the trust and confidence of the purchaser. This is just what *Western Industry* has done—opened its books to the inspection of trained auditors. The results of this inspection are published in the shape of certified audit reports, available to anyone interested.

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Now company heads can help their country, their employees, and themselves

voluntary pay-roll allotment plan helps workers provide for the future helps build future buying power helps defend America today

This is no charity plea. It is a sound business proposition that vitally concerns the present and future welfare of your company, your employees, and yourself.

During the post-war period of readjustment, you may be faced with the unpleasant necessity of turning employees out into a confused and cheerless world. But you, as an employer, can do something now to help shape the destinies of your people. Scores of business heads have adopted the Voluntary Pay-roll Allotment Plan as a simple and easy way for every worker in the land to start a systematic and continuous Defense Bond savings program.

Many benefits . . . present and future. It is more than a sensible step toward reducing the ranks of the post-war needy. It will help spread financial participation in National Defense among all of America's wage earners.

The widespread use of this plan will materially retard inflation. It will "store" part of our pyramiding national income that would otherwise be spent as fast as it's earned, increasing the demand for our diminishing supply of consumer goods.

And don't overlook the immediate benefit . . . money for defense materials, quickly, continuously, willingly.

Let's do it the American way! America's talent for working out emergency problems, democratically, is being tested today. As always, we will work it out, without pressure or coercion . . . in that old American way; each businessman strengthening his own house; not waiting for his neighbor to do it. That custom has, throughout history, enabled America to get things done of its own free will.

In emergencies, America doesn't do things "hit-or-miss." We would get there eventually if we just left it to everybody's whim to buy Defense Bonds when they thought of it. But we're a nation of businessmen who understand that the way to get a thing done is to systematize the operation. That is why so many employers are getting back of this Voluntary Savings Plan.

Like most efficient systems, it is amazingly simple. All you have to do is offer your employees the convenience of having a fixed sum allotted, from each pay envelope, to the purchase of Defense Bonds. The employer holds these funds in a separate bank account, and delivers a Bond to the employee each time his allotments accumulate to a sufficient amount.

Each employee who chooses to start this savings plan decides for himself the denomination of the Bonds to be purchased and the amount to be allotted from his wages each pay day.

How big does a company have to be? From three employees on up. Size has nothing to do with it. It works equally well in stores, schools, publishing houses, factories, or banks. This whole idea of pay-roll allotment has been evolved by businessmen in cooperation with the Treasury Department. Each organization adopts its own simple, efficient application of the idea in accordance with the needs of its own set-up.

No chore at all. The system is so simple that A. T. & T. uses exactly the same easy card system that is being used by hundreds of companies having fewer than 25 employees! It is simple enough to be handled by a check-mark on a card each pay day.

Plenty of help available. Although this is your plan when you put it into effect, the Treasury Department is ready and willing to give you all kinds of help. Local civilian committees in 48 States are set up to have experienced men work with you just as much as you want them to, and no more.

Truly, about all you have to do is to indicate your willingness to get your organization started. We will supply most of the necessary material, and no end of help.

The first step is to take a closer look. Sending in the coupon in no way obligates you to install the Plan. It will simply give you a chance to scrutinize the available material and see what other companies are already doing. It will bring you samples of literature explaining the benefits to employees and describing the various denominations of Defense Savings Bonds that can be purchased through the Plan.

Sending the coupon does nothing more than signify that you are anxious to do something to help keep your people off relief when defense production sloughs off; something to enable all wage earners to participate in financing Defense; something to provide tomorrow's buying power for your products; something to get money right now for guns and tanks and planes and ships.

France left it to "hit-or-miss" . . . and missed. Now is the time for you to act! Mail the coupon or write Treasury Department, Section A, 709 Twelfth St. NW., Washington, D. C.



FREE - NO OBLIGATION

Treasury Department, Section A,
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Please send me the free kit of material being used by companies that have installed the Voluntary Defense Savings Pay-Roll Allotment Plan.

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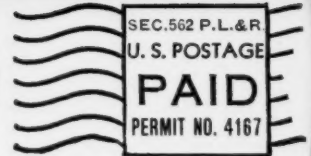
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FORM 3547

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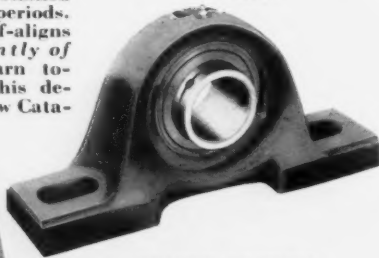
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MATERIAL AND LIQUID
FLOW AUTOMATICALLY
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TELLEVE**

*Dust-Tight,
Explosion-
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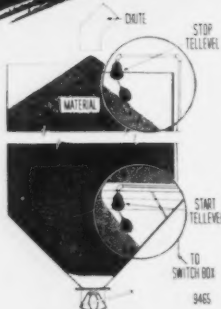
You can start and stop Conveyors feeding bulk materials to bins, or open and close valves feeding liquids into tanks, inexpensively with the TELLEVE Automatic Storage Control.

Operation is normally automatic, but can be made to keep flow of material continuous or stopped until switch is thrown.

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